THE GARDEN IN RELATION TO THE HOUSE.

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IT is not proposed in this Paper to set forth a history of gardening in this country, but rather to state my opinion as to the treatment to be adopted in laying-out grounds, particularly in their more immediate relation to the house, and to indicate generally a practical application of the theories advanced.

It would be well to first offer some remarks on a subject that has long vexed designers—viz.: the style of treatment to be adopted—and to try and arrive at some definition of ideas. Some extremists maintain that the garden should be a formal enclosure, with intricate flower-beds relieved by plots of grass, with little consideration for the possible creation, or the embracing, of a beautiful landscape. Other extremists would bring the field up to the drawing-room window, and dot patches of flowers and plants irregularly about the lawn, with the fond idea that such treatment is natural, and that design is incompatible with beauty.

The art of architecture developed long before that of landscape-gardening. The fortress, with its small enclosure of exercise-ground, was followed by the herb-garden and orchard of the religious houses, and it was only when people were able to live in peace that any extension of pleasure-grounds became possible. The prime idea then was to provide food, and to mark in the treatment of the enclosed ground a difference between it and the surrounding country. This formal treatment developed greatly till it reached a high state of perfection under Elizabeth, when the architect who designed the house also laid out the garden with its fore-court and broad terrace, its straight walks leading from it encompassing the flower-beds, and all harmonising with the building. Yet the garden was enclosed, and little thought devoted to the treatment of the country outside beyond the planting of avenues. Bowling-greens were common, and the pleasure and rest of greensward were appreciated.

Under Charles II. design began to deteriorate, and the ideal sought for was intricacy of parts, repetition, and vagaries. Soon came a reaction, and, towards the end of the eighteenth century, fashion ruled the destruction of most of the old formal gardens, to be replaced in very many instances by a no less artificial and formal imitation of nature. The designers at this time were not content with amalgamating with whatever was good of the old work a natural treatment of the outlying ground, or of giving greater breadth to the existing formal work, but swept away all this and replaced it by meaningless walks, by clumps of trees and shrubs dotted irregularly on the lawn and park, by a boundary of planting, by imitation of bits of natural scenery, by the introduction of artificial ruins and such-like

objects, with the desire of making a picturesque landscape. There was no charm for them in the cultured classic taste that formed the quaint hedged-in retreat with its pool and splashing fountain, and the sculptured goddess relating on her pedestal the pleasures of the garden.

Excess was reached in the formal treatment when the rule was repetition of intricate designs for irregularly growing flowers, of long avenues of trees with indefinite purpose, of hedges of yew, box, thorn, or privet, growing beyond control, of single plants cut into fantastic shapes, and of plants tortured to take the place of masonry or brickwork.

Excess was reached in the picturesque treatment by the effacement of existing work near the dwelling, simply because it was formal, by the effacement of any appearance of division between the garden and park, by the placing of the refined building in a waste of field, by the mere extension of the nearer enclosure to the boundary, by a striving after a forced picturesque effect, and by a general feeling of artificiality, though a pretension of nature-imitation was set up.

Now, does not the proper treatment lie in the happy mean? Is it not as unfitting to pretend that in a lovely undulating country, with fine old trees forming the foreground of the valley ending in a lake, with the adjacent hills clothed with trees of ever-varying shades of colour and form, with the view split up to catch a distant spire, a rising peak, or a cleft in the hills—that such a view should be circumscribed by hedges or walls, or its breadth spoiled by frittering rows of trees—as to maintain that the house shall be fixed in a field, that curved walks shall surround and lead from it and destroy all setting of the stone jewel, that clumps of trees and shrubs, artificial in their outline and grouping, should be without system dotted about as if thrown from the clouds, and that any recognition of the hand of man should be studiously avoided?

The material with which the architect works in building his house differs altogether from that which the landscape-gardener has at his service. And I differentiate greatly between the treatment of terraces, walls, steps, balustrades, &c., in stone and verdure. A stone or brick terraced wall, with its broad mouldings, its recesses, its surface clothed with varying climbing plants, its open balustrading, is a lasting work; whereas a hedge in time must lose its original character. I think architects should appreciably extend their work in the garden in connection with the building; but I also think that this work should go hand-in-hand with the composition of the greater picture, which the art of landscape-gardening should produce.

I quite recognise the charm and quiet beauty of true formal work—not the repetition of knots and hedges and avenues; but I say that in the treatment of ground we should pass the old limitations, that we should be influenced by a broader spirit, that we should take into account the increased resources of modern horticulture, that we should try and appeal to the mind, not merely to the eye, by the beauty of composition of line, colour, perspective, and grandeur, and that we should not degenerate a liberal art into a mechanical one. It must be borne in mind that places differ much—in the conformation of the ground, in climate, in soil, in the requirements of the owner, in the amount to be expended, and in the possibility of an extension beyond the immediate precincts. It would therefore seem futile to lay down any hard-and-fast rules for design, for that which would be suitable for a plain would be inapplicable to a hillside; that which would be fitting to a peaty hollow would be wrong on a chalky slope; that which would satisfy the poor man would hardly be deemed sufficient indication of the wealth of a proud possessor; that which would enclose an oasis from the surroundings of factories might shut off the view of lovely hill, dale, and water, and imprison the dweller within a wall—possibly charming in itself, but tiring by restraining the eye from wandering to the unseen and glorious beyond.

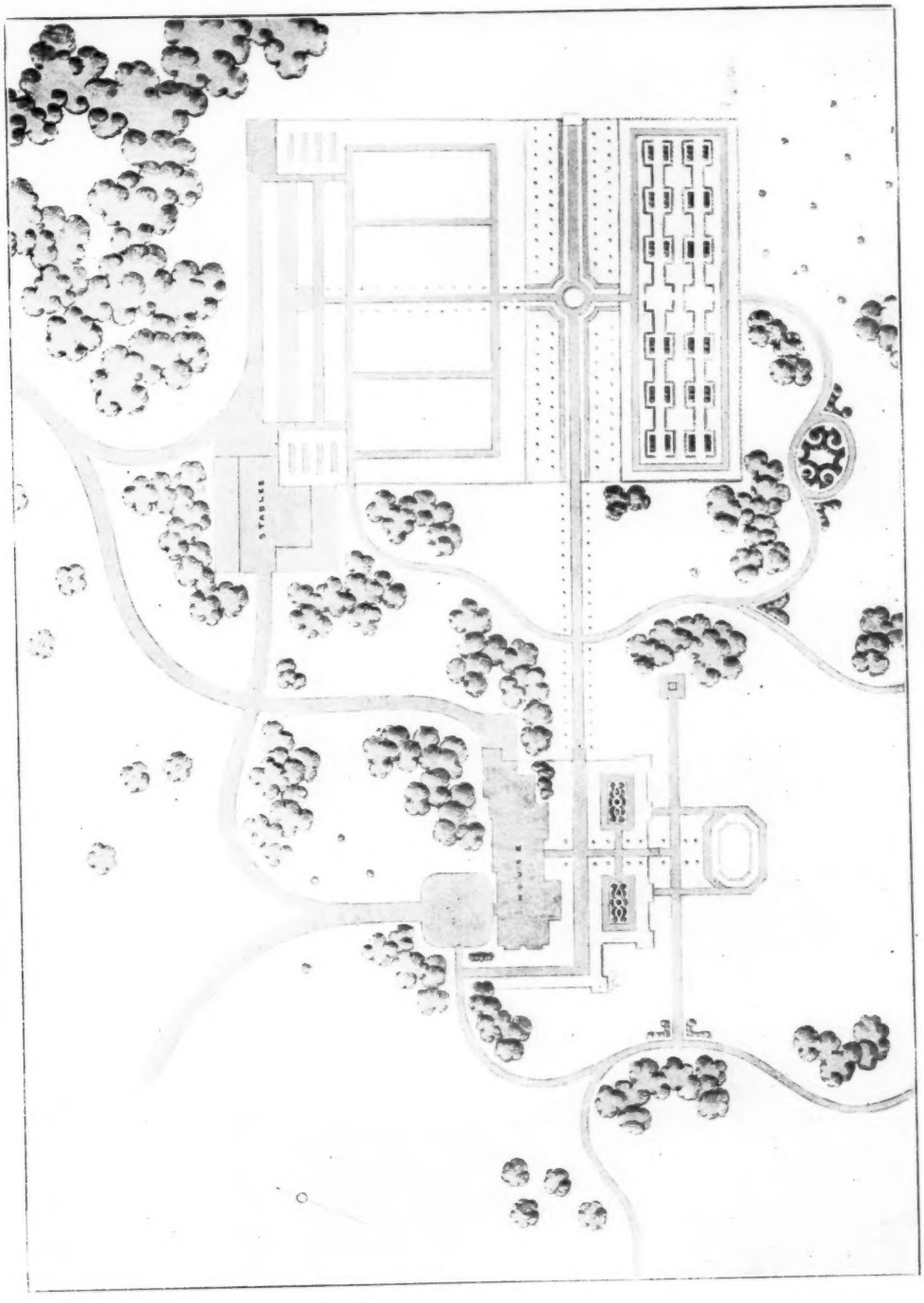

FIG. 1.

I now deal more in detail with the site, the approach, the terrace, and the garden formation and planting. In the site of a house there should be considered aspect—relation to the points of the compass; prospect—relation to the surrounding view; convenience in regard to the approaches and communication with the stables, out-offices, and gardens; the levels of the land; and the formation of the subsoil.

The forms of houses and the position of the principal rooms in them are so varied that it is difficult to put down a rule that shall be absolute for all, even in the matter of aspect. In the Southern and Midland counties of England it is preferable that the main line should face south-east. If the sides of a house form a square, and the front be to the south-east, it would have sunlight on all its walls, and, as the sun exercises its fullest force between 1 and 2 P.M., its rays would then fall at an angle on the walls, and thus by its indirect impact save much oppressive heat. If we imagine a plan that possesses desirable features, the site should have fine prospects to the south-east and to the south-west, the principal approach and entrance on the north-western face, the offices on the north-eastern side, with the stables and kitchen-garden beyond; the pleasure-gardens on the south-east side, with a continuation towards the east, and the south-western face might be open to the park. The broad terrace would be on the south-east face, with its main straight walk continued to the distant fruit-garden below the kitchen-garden, and its balustraded wall continued round the western front to join with the formal forecourt or entrance drive.

In Fig. 1 [p. 187] we have such an example. A large group of old elms beyond the south-east corner of the house forms the very necessary foreground, while raised planting beyond the south-west corner produces a similar effect. And here I would add that a tree, or a near group of trees, should invariably be taken into account, so that they may provide a foreground for the prospect. In fact, if no such foreground exist, it is often advisable to make one by raising the ground and planting on it a few old trees.

A house should not be placed facing a parallel boundary, or row of trees, or lie of country; and this remark applies equally to smaller houses not actually in a street. In hilly ground the house should preferably be placed on a slope, and the floor-level kept well up. In fact, I find that the majority of houses have their floor-lines placed too low—I do not mean in relation to the immediate surroundings, but to the general land-level. At Iwerne Minster, the house, necessarily placed in a flat area but with hilly country around it, had its ground-line raised ten feet, with the floor-line two feet above this. In ground sloping from north to south it becomes more necessary still to keep up the ground-line of the house, so that the approach may not fall to the house. A house will not appear perched up if its ground-base be sufficient.

It seems desirable that such beauty as may be derived from a prospect should be obtainable from the best apartments of the house, and the position of these rooms may be regulated accordingly. It is possible that the best views cannot be obtained from the house, hence another source of attractiveness is created in the gardens and park, and care should be taken to emphasise this spot. There is the prospect into the garden, with glimpses of the winding drive, the corner of the yew hedge enclosing the herbaceous garden, the climber-covered wall, the lake, the varying colours of planting, the long-stretching lawn, with the foreground of basin, balustrade, or tree; and there is the prospect of distance, with the view of distant mountains, of sea, of abrupt hills with ever-changing shadows, of woodland, or of grassy plain, with the welcome growth of intervening trees. The principal rooms of the house should face an opening in a view, and not an abrupt hillside: and if an uninterrupted plain extend, then foreground and middle-distance objects must be introduced to break up the too regular panorama.

Shelter has an obvious connection with the particular district. The most natural and

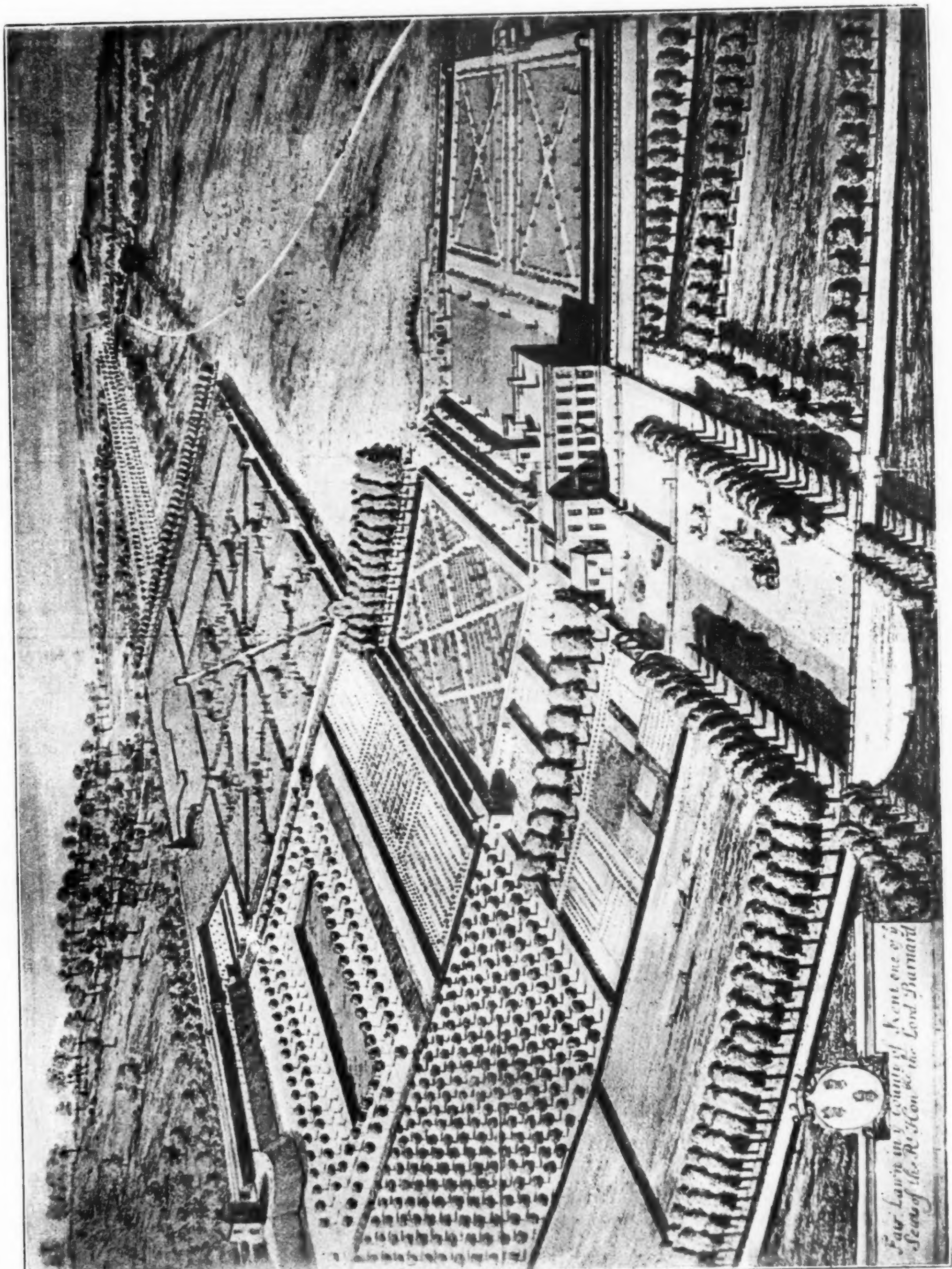
Fair Lawn in ye County of Kent one of ye
Seats of the Rt Hon ble the Lord Barnard

FIG. 2.

best protection is found in a wooded hill, and wind force is more effectually modified by growing trees than any other means. If no hill exist, planting should take its place. It should extend generally on the north-east, north, and north-west sides, and, in many districts, on the south-west side. The northern and eastern planting may extend fairly close to the house, but not so planting on the south-west side, as it is not conducive to health to have a mass of foliage close to the house on the south-west side. The difference can frequently be felt by any one who stands at the south-west corner of a wood with a north-east wind blowing, where its passage is tempered by blowing through the trees, and by one who stands at the opposite position with a south-west wind blowing through the trees, where its passage through them gives the watcher a damp experience.

With regard to subsoil, frequently there is little choice. When a dwelling-house has to be erected on a fresh position a porous soil is to be preferred. But gravelly districts may have been old river bottoms, not a formation in an open and deep sea; and when you find these near to existing rivers, when low-lying, or in districts that are thickly inhabited, it is in my opinion as necessary to spread a layer of concrete over this site as over a clay subsoil to prevent the exhalation of noxious gases through the light soil from depths where percolated moisture may be stagnant. In moderately pervious clay dampness can be removed by efficient drainage.

Perhaps it would be well to put this matter more in detail, as it must so often come before you. Retentive soils do not give off vapour so copiously as free open soils, and the temperature is thus not lowered. The lower the water in the soil, the less evaporation is there, and the warmer the adjacent air. The level of the water in the subsoil regulates the amount of ground air. A fluctuating water-level is unhealthy. Subsoil water is colder than rain-water, and as this warmer water will not descend through the colder water, this latter must be carried away. Therefore, drainage is introduced. Soils have a very varying conducting capacity for heat, and clay is a better conductor of heat than sand; so it allows the sun's rays to pass rapidly downwards, and the surface does not become heated to so high a degree.

From these data it is evident that if a light clay soil can allow the surface-water to pass through it quickly, and that the level of the subsoil water can be kept even by the provision of adequate drainage, then an even temperature, free movement of air in the soil, and a healthy condition must result. You must frequently have noticed in walking or driving through an undulating chalk district at sunset, how the dampness is felt in the hollows when the declining sun's rays have left them.

In settling the site of the house, the approach to it helps to determine its position, and the chief points for consideration are the entrance from the public road, the route thence, the divergence to the stables, offices, kitchen-gardens, farm, &c., and the direct entrance to the house.

The approach to a house should always appear to be direct, and any deviation from such directness should not only arise from, but should also be made to arise from, some decided obstacle. By direct is not meant straight. A straight approach requires careful treatment. It is artificial in character, it can appropriately be used when an imposing or somewhat pretentious building is at the end of it, or when the distance is short, and when the country is flat. In sloping ground it should, if possible, be made against the slope of a hill. The gradient should be even and flat, or very slightly and continuously curved, otherwise it will appear not straight. If the ground is very undulating, a straight road is out of character with its surroundings. It may be worth mentioning that in laid-out grounds of Tudor times, even where an avenue has been planted, the drive has followed a curved line to the forecourt of the house. [See Fairlawn, p. 189.]

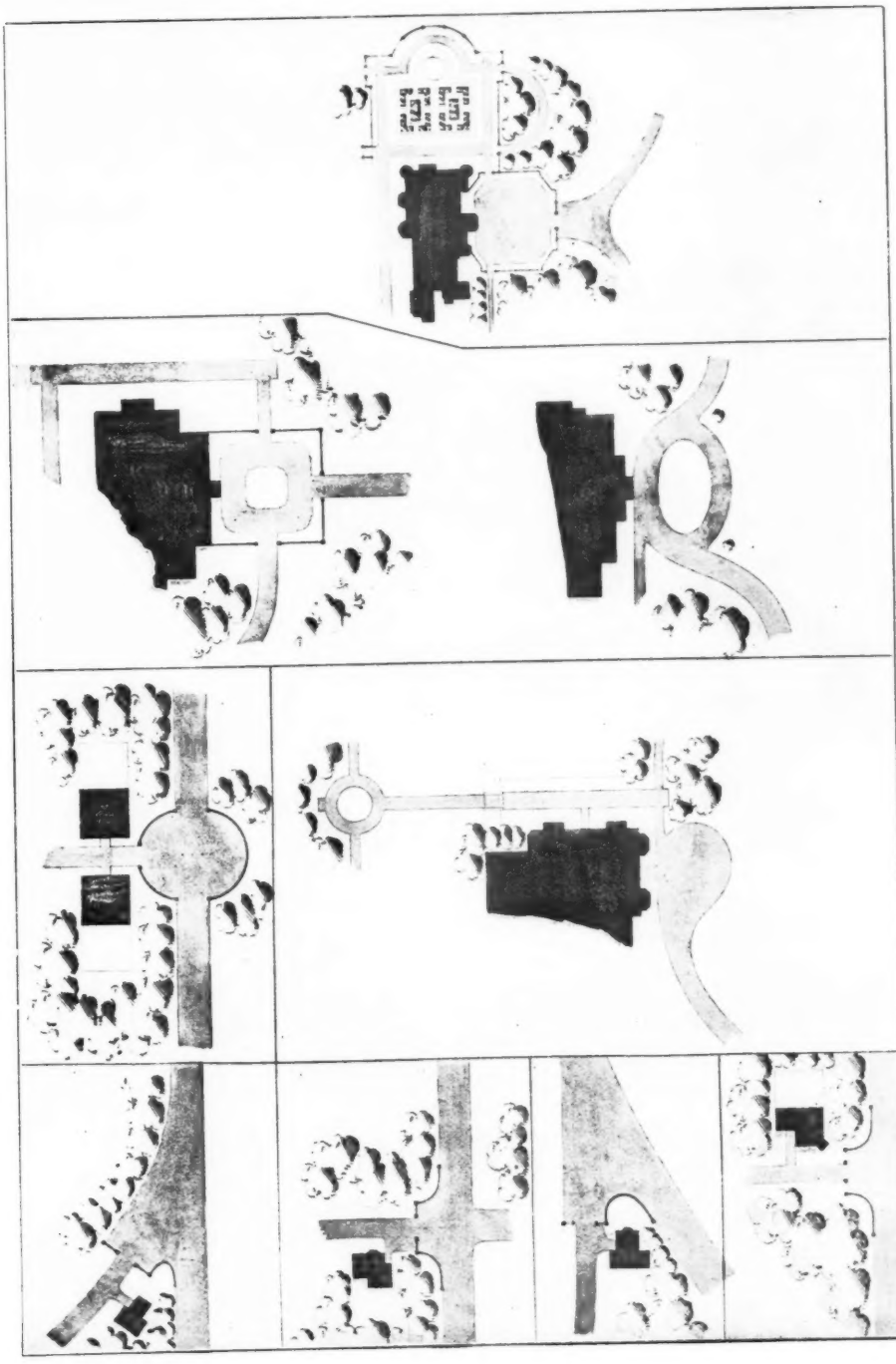

FIG. 3.—ENTRANCES.

A curved line of road is generally to be preferred, for it is more easy of construction, more varied views can be obtained, its gradient can be varied, following within limitations the natural undulation of the ground, and the side slopes can be more easily and freely dealt with than the sides of a straight drive. At the entrance from the public road, and also where the road reaches the house, the route should be nearly level, and the line straight. It should rise towards the house when approaching it directly, and it should be level at crossings or junctions. It should not run parallel with the public road, with the mere purpose of lengthening the course or seeming to prolong it, though, when the house is at a much higher level, and the object is apparent, this resource must sometimes be adopted. Curves should be long and easy, and the gradients should not be those of a certain ratio meeting at angles, as in a railway line, but should rise or fall with a curve, as even, continuous, and graceful as the horizontal line of the drive. The gradients should not be steeper than 1 in 14, though 1 in 9 is a road over which a carriage may be driven in safety. A breadth of 9 feet suffices for the passage of one carriage: where two carriages may meet, the road should be 14 feet wide. The above dimensions may be adopted only when the ground is flat, and on either side of the road is grass, on to which a foot-passenger may retire, or on to which a carriage may be turned. But in ordinary cases it is better to allow 11 or 12 feet for a single drive, and 14 to 18 feet for the double road. But the width of drives is frequently determined, not by the exigencies of the traffic, but by the relatively important character of the route. Thus, a drive to the principal entrance of the house might be 15 feet, while that to the stables or offices might be 12 feet. A drive of 14 feet should round over 3 inches, and the turf at sides should be 1½ inch above the roadway. Gully-holes, or means provided for the disposal of surface-water, should be provided about every 50 yards, this distance being lessened on steep gradients up to 20 yards apart. Drives should have a bottoming of 6 to 9 inches of hard core, and a surface coating of gravel of 3 inches. Walks should have from 4 to 6 inches of hard core, and 2 to 3 inches of surface coating of gravel. Drives that leave the main route for unimportant points should be curved as soon as may be convenient, and taken from the main drive at nearly right angles, and the sides of all drives should have a level space of at least 2 feet: and whether the drive be in cutting or filling, the sides should slope from this to the natural surface by an ogee curve. The treatment of either end of the main carriage drive is of importance. In choosing the place for and forming an entrance from the public road, advantage may be taken of a turn in the highway, so that by adopting the line of the public road, and continuing it to the entrance-gates, an open area may be provided and importance given to the entrance, or the entrance may be made at the junction of two roads, or where a cross road comes on to the main road. Unless in wide highways, the entrance should be set back sufficiently to allow a carriage to stand clear. The entrance to a straight drive should always be made imposing. In all drives, when the entrance leaves the highway at right angles, thought must be given to the treatment of the ground on the opposite side of the public road. It is advisable not to make the entrance at the actual boundary of the property. Consideration must also be had for the direction of the principal traffic either to town, station, church, or notable places. It is advisable to plan the entrance on level ground, at a break of gradient, preferably at the foot of a hill, and not part-way up the ascent.

The lodge and entrance gates belong to the drive, and should be parallel with and at right angles to it, as distinguished from the highway. The face-line of lodge should be at least 10 feet from the edge of the drive, and its windows should be able to command the entrance and a certain length of drive. On entering by the drive, it is advisable to create a good impression, and therefore to mark distinctly the difference between the dusty highway and the shaded, well-trimmed drive within the gates. Planting may be introduced on either side

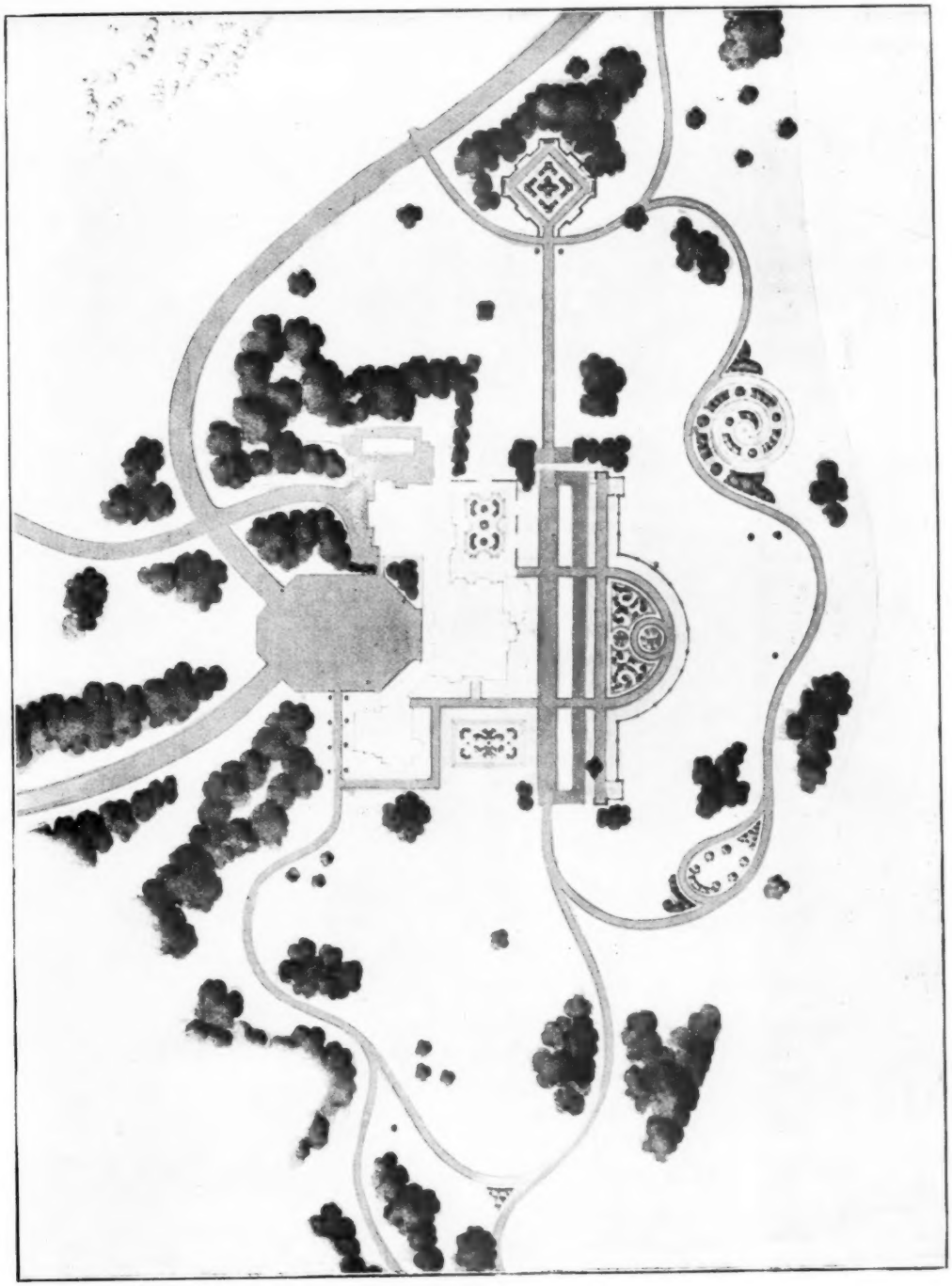

FIG. 1.—BAGSHOT PARK.

of the entrance, but once well inside, a view should be given of the outlying grounds, or stretch of park, or distant wood. A curved drive should not be planted continuously, but broad masses of planting may be introduced, at first to shut off the highway, at turns in the drive, and on the top or slopes of knolls round which the drive may wind. If a winding drive is in cutting, it is well to avoid a continuous formal slope. The eye will determine the ratio of slope by its most hollowed part; therefore, hollow out the ground in such parts where the neighbouring ground more readily lends itself to it, and keep other parts steep, planting the tops and slopes. The drive should not skirt the garden, or overlook it. It is sometimes difficult to comply with the former condition, but the latter can generally be met by sinking the carriage-way, by raising a bank along the gardens, and by planting. The drive frequently passes through the gardens, in which case its treatment is that of a broad walk.

The direction and level of the approach, and the character of the architectural features, will rule greatly the plan that can be adopted for the treatment next the house. The gravelled plain in front of the porch should not be less than 33 feet for a small house, but 40 to 70 feet are requisite where two or more carriages may stand. There must be a sufficient space on each side of the porch, in line with it, to admit of carriages drawing up to and leaving the door conveniently. If a forecourt be surrounded by walls or balustrading, this should not be higher than 3 feet, unless special circumstances require it. In ground rising from the house, a lower enclosing boundary-wall may be used, with the ground filled up to the top of the wall. I think it advisable that there should be a margin of turf between the edge of the drive and the house or forecourt walls. [See examples, p. 191.]

The treatment of the terrace also depends very much on the architectural character of the building. By "terrace" I mean not only the narrow strip of level ground placed parallel with the house, or the more stately portion—often with architectural adornments—that is laid out along the face of the structure, but the whole of the ground that forms the base or setting of the building. A great divergence between the work of English and foreign landscape-gardeners is to be seen in their several methods of dealing with the ground immediately surrounding the house. In England, we insist that the treatment of ground next it shall be artistically formal, with regular lines of turf, wall, slope, walk, or bed, all displaying harmony as far as may be, with its architectural character. On the Continent, with some important and notable exceptions, they surround the house with broad, irregularly curved spaces or walks, that have nothing in common with the design of the structure. By one practice the endeavour is to give a base to the building and to create on the contiguous ground an expression of kindred artistic spirit; by the other, the ground is treated as something apart, and a feeling of unrest is created.

A terrace may have various forms, from the simple walk parallel with the house to a more elaborate arrangement. The larger, more important, and decorated the building, the more extensive and massive may be the terrace. It should have a definite proportion to the size of the house. A rough rule for the top terrace is that it should extend from the face of the house as far as the height of the main building. But this width must depend on the nature of the ground beyond, so that the prospect of this ground be not shut off by the terrace. The part nearest the house should be level with its ground-line. The ground-line may be taken as 18 inches below floor-line. Length of terrace gives importance to a plan. The grass next the house should not be less than 10 feet, the walk not less than 10 feet, and the grass between this and the wall or turfed slope not less than 8 feet. The terrace should preferably slope 1 inch in 10 feet from the house. The greater the depth of slope, the greater should be the distance between the walk edge and the top of the slope. Gravel may extend, however, to a balustrade. If a walk be made at the foot of a slope, there should be at least a

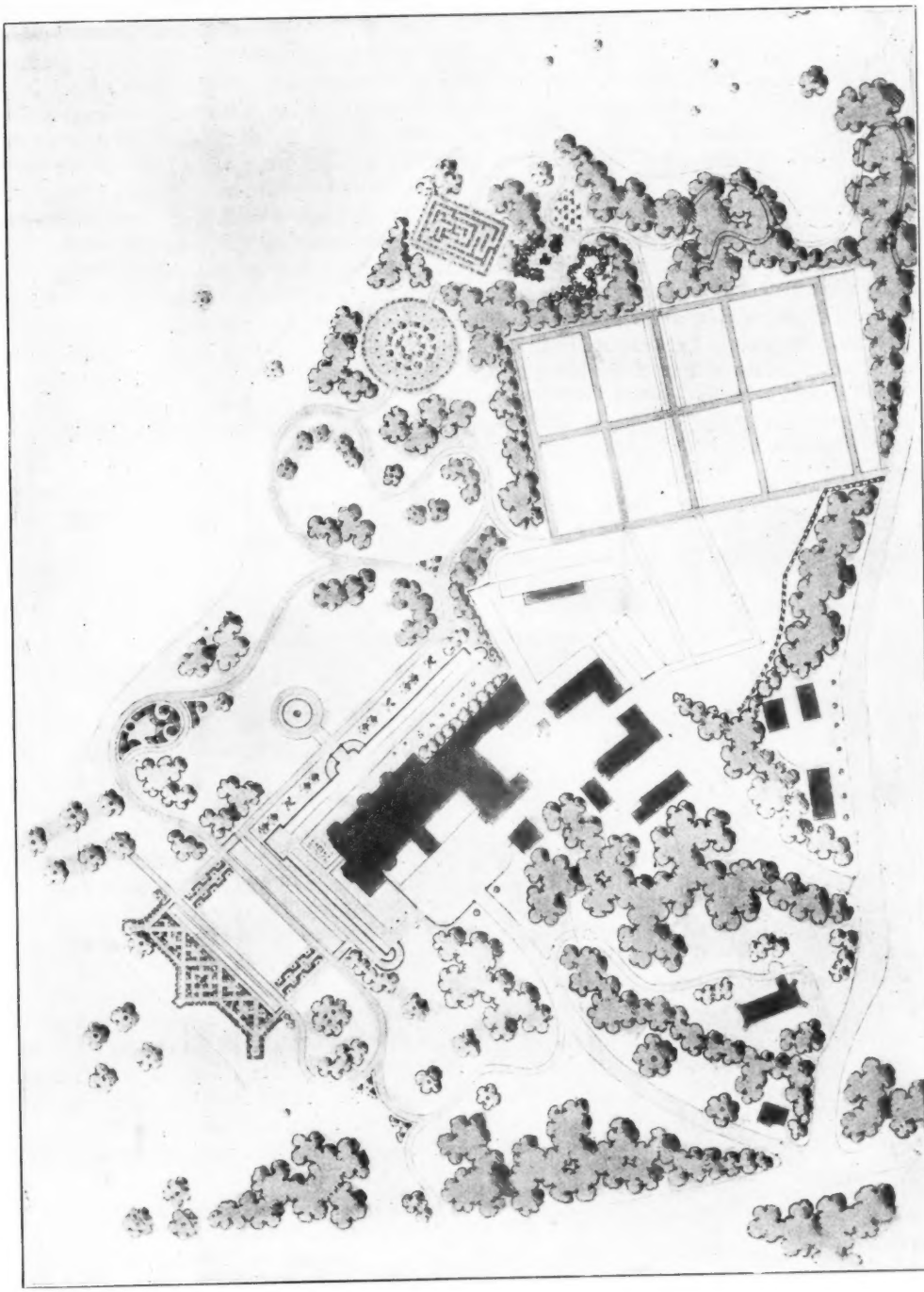

FIG. 5.—MARLSTON HOUSE.

level space of 2 feet between it and the edge of the slope. Slopes are generally made in the ratio of $2\frac{1}{3}$ to 1. They should not be more than 6 feet deep; and if greater depth is necessary, the slope should be made in two divisions, with a level space between them of not less than 4 feet. Old trees are quite in place in a terrace-garden if not too near the house. In fact much may be made of them, and every advantage should be taken of their presence in the design. The terrace may be plain with grass, but it is generally wished that in the part nearest the eye, evidence shall be given of the care bestowed by the occupier on his garden. Endless rows of carpet bedding are out of place, but we have a wealth of flowers that can only be adequately shown in specialised beds. Evergreen dwarf foliage plants may be largely introduced, and precise designs of clipped box and yew are appropriate if the character of the building is consonant with such composition. The beds should be even in width, with as few acute angles as possible, and longer than wide if seen chiefly from the house. If surrounded by gravel, the spaces of gravel and bed should be evenly disposed. Sunk panels, if adopted, should not be deeper than 18 inches, and the slopes made 1 in 1. If water is introduced, the outline of the basin should be regular and form part of the formal design. The water in a basin should not be less than 3 feet deep. Steps in a slope should range with it, the nose of the top step being in line with the top edge of slope. In turfing a slope, the turves should be laid to and join at the edges, and no turf should be made to turn over at the edges. A terrace-wall will naturally agree with the house whether it takes the place of the slope or forms part of it. It should not be less than 3 feet high or more than 8 feet, though thrice this height has been most effectively erected at Balcarres, where a splendid prospect is obtained from the higher level of the formal lower terrace-garden and the country beyond. On flat ground a line of demarcation may be made by a low stone plinth. It is sometimes desirable (as Mr. Waterhouse has done at Britwell Court and elsewhere), where the drive approaches the north side of the house from the eastward, to shut off the terrace-garden by a wall, forming a charming shelter and background to this on its northern side. The general form of terrace-walls is one parallel with the terrace-walk and the line of the house, for which it seems to constitute a base; this may or may not be surmounted by a balustrade. From this terrace there may be steps conducting to a lower level, perhaps to the pleasure-grounds, but possibly to the second terrace with its formal garden, whence communication is given to the naturally treated landscape-gardens. To this second terrace there is preferably given a balustrade, which bears the expression of a boundary. It is well to remember that an access other than by steps from the terrace to the gardens should be devised for the possible use of invalids. It is also well to stipulate that, as the original level of the ground or site of terrace is generally changed, the soil on the site be stripped so as to be available for the later surface-work. The walls of terraces should be made available for climbing-plants—not that I advocate the omission of recessed spaces for seats or breaks for effect; but I do advise that these walls, so visible and admirably adapted for the purpose, be utilised to display the climbing plants which form such an attraction.

I now pass on to the treatment of the garden proper, and as a text I quote partly from a book which I published seven years ago, which defines in this respect the system I advocate. So many considerations press in to vary design in the general plan of a garden, that arbitrary dealing by imposition of what may be termed paper designs, however ingenious, is ill-advised. The detailed plan should spring from the site as an adaptation of its natural, or created natural, features, and should not be, as it were, forced upon the position, crushing it to an artificial scheme. To copy simply the design of another place is inadmissible. Considerations that rule in this connection are almost infinite—extent, geological formation, soil, existing natural formation or features, climate and aspect, the display of distant beauty, conformity to

outside influences, particularly to the requirements of the possessor, and the expenditure of money that may be made. It is this important variety of modifying influences, and how they are dealt with, that gives charm to each new work of landscape-gardening, and to the developments it presents, just as we contemplate a fresh work of the kind in pictorial art, and note how the artist has treated the natural features, the colours and tints, and their modifying juxtaposition on the canvas. The painter may indeed have his rules as to composition, for the use of his colours, and the production of his distances. His picture is not a servile copy of nature in its exact details, but an artistic rendering of the effect of nature, as seen by his educated eye and recorded by his skilful hand. His picture, however, is viewed from the same point, but in the natural pictures created by the landscape-gardener the point of view is on every side; there is no back to his canvas. In each position the object should be one of beauty, of interest, and of delight, and its relation to other features and to the whole field of the spectator's vision be closely and truly considered. The landscape-gardener must consider that his colours change and grow; he must realise as he creates his picture that in a few years what now seems like a light green stroke of pigment to the painter may have become a tall tree, beautiful in itself, but of altered beauty, either helping or marring the landscape. He follows nature by adapting or garnering her beauties, and tutoring her—so to speak—to a display of them. But by following nature is not meant a slavish imitation or reproduction of any of her particular scenes. Some are unattractive, some very inappropriate—all are subject to dissimilar conditions, and imitation in nature as well as in art produces pettiness. But the spirit of the beauty of nature, embodied as it were in those of her works or features that express her majesty, simplicity, peacefulness, sweetness, repose, refinement, strength, and variety in form, colour, abundance, or any of her modifications as parts of loveliness, should be included and brought into juxtaposition in an ideal scene so far as we are able to promote its natural development.

The terrace, as before explained, and the region immediately next the house, and indeed, in a less degree, that next any minor building in the grounds, being by position artificial, should be treated in a formal manner. This will so far influence our treatment of the rest of the landscape that as the house is approached from the boundaries of the estate the planting design and work should become finer, more intricate, and more careful. Beyond the line of the terrace-wall, slope, or walk, the design of the garden may be naturally treated, that is, by curved lines of walk and planting, and by undulating ground.

In forming the surface of the ground we should realise the fact that the graceful undulations of fertile land result from the action of water. So, in our circumscribed area our treatment should be consonant with what is a pervading expression but idealised.

From the terrace, walks should not go off in the same direction, but should, at any rate for some distance, deviate. In the general arrangement of such walks, the curves should be set out with broad sweeping lines, the chord of which should be so great that each sweep should be hidden from the succeeding bend. They should not follow the boundary. A multiplication of meaningless walks should be avoided, as should be the creation of the wriggling serpentine lines so often seen in badly designed villa-gardens. It should be generally apparent that each walk serves some special object, as the route to some distant point, to connect two lawns, to approach some particular group of planting, to reach some point of view, or to provide alternative means of communication at different levels. No doubt the designer will have first placed or emphasised the group of planting, the lawn, the variation in level; but the art which serves to emphasise the idea that the walk can only go rightly in one place must not here be apparent.

It is advisable to determine at once the lines of distant views, so that no bushes may be

introduced in the direct line of sight. The eye can be directed to any particular point, as it invariably tries to look down any opening or hollow; and intermediate objects, just out of the direct vision, provide by their number a means of estimating the distance.

The determination of well-chosen positions of special objects is an early consideration. These may include a rose-garden, a hedged-in enclosure for herbaceous or special plants, an *allée* of clipped yew or box, a secluded rock-garden for alpine plants, beds for special collections of American, Japanese, cone-bearing, or other exotic trees or shrubs. These spots provid objects of interest. In the garden it is undesirable that its extent should be visible at a glance from any part. The spectator should receive an idea of its vastness by reason of the contrasting treatment of its several divisions, each insensibly separated from the other, but not screened off. The sweep of the lawn should be unimpeded and clear, and nothing should invade its expression of repose. It forms the ground of all our work. The kitchen-garden, too, need not be the unattractive cultivated field for the growth of vegetables. It can be made delightful. Picture to yourselves a long straight walk leading from the terrace, flanked by golden cypress, entering through a grille the red-brick kitchen-garden wall, and continued past borders of bright flowers, available always for cutting, on to a garden-house, passing on its way a circular stone basin filled with lilies, from which a broad walk, also bordered by sweet herbs and flowers, leads to a range of glasshouses. Beyond the flower-borders are fruit-trees, pleasant in spring and autumn, with glimpses of patches of strawberries, currants, gooseberries, and raspberries, with secluded spots of greensward, on which are seats beneath the walnut or mulberry trees, and hedged in by old Provence roses.

As before stated, water has been the chief agent in moulding the surface as we now see it. The rush of water has scooped out the valleys, and, as the river has diminished to a brook, so the tops of hills have become clothed with vegetation. It is true the dwindling stream has allowed the trees to clothe the hill-sides, and in time the rain has brought down soil to make fertile the valley. Both trees and shrubs undoubtedly thrive better, and can be displayed to better advantage, on raised ground than in a plain. When the ground is broken or undulating (either natural or created), advantage should be seized of marking the eminences by planting. Rising ground may be in appearance raised still higher if we cover it with wood. Trees standing singly emphasise falling ground. The brow of an eminence should not be seen above trees. If the brow forms a tedious continued line, it should be broken by clumps or large masses along its range, and by dividing the line into very unequal parts. In plantations near the eye, lights and shadows are more apparent than on distant groups of trees; the effects are stronger; light greens and white foliage or blossoms and red tints of leaf or flower seem to be nearer to the spectator than they really are, whereas dark foliage planted in a recess makes it appear deeper still. Therefore a detached clump or a single tree of lighter green will seem nearer than an equidistant planting of darker hue. For example, among the light green trees are plane, birch, ash, acacia, lime, poplar, willow, larch, abies concolor, pinus insignis, maple, aucuba, colchic laurel, sea buckthorn; and among the dark green the oak, beech, Austrian pine, cedar of Lebanon, hemlock, yew, holly. In setting out groups of planting, uniformity of curve and parts of circles should be avoided. Long bays with the turf running up them should be made, for the spectator's vision is unconsciously led up them if only for a moment. The groups should not assimilate. Variety of outline in the height is almost as desirable as variety of outline in the plan. This applies equally to the character of the foliage and to the tints, and especially to the undulations of the made ground, where uniformity and repetition destroy one of the most exquisite expressions of nature's beauty—the wave-line of the ground—by rendering it unnatural in form. The ground under raised planting mounds should invariably be broken up, even if the top soil is not removed, though

this is generally required for the surface. The site of all plantations when the ground is not raised should be doubly trenched, that is, dug two spits deep, and the ground beneath broken up. The outline of a group is not meant to be a hard artificial boundary, enclosing an earthy bank on which shrubs and trees are planted, but a line to which it is intended that the plants shall spread, covering the earth's surface, and such an outline should be graceful and give the required filling to the general design, even when the verge first marked may be overgrown. The ground is generally turfed to such outline. This should not be marked with a formal row of bedding plants or other stiff edging. Where flowering plants are introduced—and they should be copiously—they should grow naturally to the edge, and separate plants may be placed beyond the main group. Formal planting may be introduced with propriety at the intersection of a walk, or at a point where there is some artificial combination. Such beds should take a regular shape, and their surface be flat.

There is now such a wealth of imported trees and shrubs, that such resources cannot be neglected. Even in old Parkinson's time, he enumerates and advocates the growth of "Outlandish flowers that for their pride, beauty and earlinesse are to be planted in gardens of pleasure for delight." Are these new possessions then to be ignored? Certainly not. In an extensive garden that is only formal, the idea forced on the eye of the beholder is one of wonderment as to design. But soon the artificiality of the whole forces itself on the mind, and its magnificence is not compensated for by the exclusion of repose.

I maintain that we should carry out in the parts surrounding the house the architectural feeling of the design in terraces, walls, steps, basins, beds, and so form a base; that we can still have the dignified and quiet delight of formal work—not a narrow curtailment of the whole design. But I insist that there is in addition a broader treatment beyond—a work difficult to proportion in relation to foreground, to broad lawn-spaces, to grouping and choosing trees and shrubs for effect in size and colour, to directing the eye to desired points, to taking advantage of climate and character of the place either natural or acquired, to provision of light and shade in the undulation of the ground, and to a knowledge of horticulture. This art-gardening is, I venture to assert, far beyond the limitations of formal work only, for it can apply the balance and proportion of the latter, and, in addition, present to us a noble conception of art-work, in its execution of outline, surface-formation, and grouping, and draw into the picture the greater, broader, varied landscape.

In conclusion, I wish to thank you publicly for the honour you have conferred upon me, by electing me an Hon. Associate of this distinguished Institution, and trust that a feeling of co-operation may be engendered in the practice of the two arts which we are both striving to promote.

DISCUSSION OF MR. MILNER'S PAPER.

The President, Professor Aitchison, A.R.A., in the Chair.

The Hon. ALICIA AMHERST, having been asked by the President to address a few remarks to the Meeting, said she had listened with much interest to Mr. Milner's Paper, and thought many of his ideas on garden design were excellent. It was important that the garden should be laid out as far as possible to coincide with the architecture of the house, and that fact was being more and more appreciated every day by designers. She was glad to hear the lecturer allude to Parkinson and his "outlandish" flowers, as surely the first object of a garden was to make a suitable place in which to grow plants. There were never so many "outlandish" flowers as there are to-day, and they ought to be taken into consideration when making the plans for new gardens. Just as in designing an Elizabethan house it had to be adapted to modern requirements, so in a modern garden those flowers ought to be considered, and when the gardens were being laid out the plants themselves should not be lost sight of. To grow many things in some parts of England a walled garden, or one with sheltering hedges, might be almost a necessity. Again, in the southern or western parts there were many trees, sub-tropical in appearance, which could be so easily naturalised

that it was not at all in the interest of horticulture to contract or limit the design of the garden. Mr. Milner's Paper had called attention to the necessity of promoting garden design, which she was sure would lead to good results; but she was speaking from a horticultural point of view.

MR. ASTON WEBB [*F.*] had very much pleasure in proposing a vote of thanks to Mr. Milner for his very admirable Paper. He did not remember that the Institute had ever before had a Paper on Gardening, or at any rate not for a long time. Mr. Milner had combined in his Paper a great deal of useful information with practical details, which, when printed in the JOURNAL, would add a very interesting chapter to the valuable Papers contained in its pages. At the last Meeting the Institute had had the advantage of hearing an Honorary Associate on Sculpture. To-night an Honorary Associate, a master of his craft, had favoured them with a discourse on an equally interesting subject, Gardening. Both were subjects in which architects were most closely and properly interested. It was impossible to choose a more delightful subject than gardening. The first paradise on earth was located in a garden; and, although that garden was not altogether a success, it was not the fault of the garden, but partly owing to what was planted in it, and partly to the people who occupied it! Still, at the present day, to his thinking, the nearest approach to a paradise on earth was a beautiful garden on a beautiful day; and anything that would help them to realise such a paradise was to their advantage. He ventured to think, however, that the most beautiful garden was incomplete without the house, just as a beautiful (country) house was incomplete without a beautiful garden surrounding it. Therefore it seemed essential that the producers of the house and the garden should work hand-in-hand from the very commencement; and, if he might venture a word to his brother architects, he would say it seemed to him most desirable that when they were building a house they should call in the landscape-gardener as their friend, and discuss with him the way they proposed to enter the house and the stables, how to lay out the garden, &c., before a brick was laid, or even a line drawn on paper. The question whether the garden should be formal or otherwise naturally interested architects. Not only at the present day, but, as Mr. Milner had shown, from the time of Queen Elizabeth, interest had been taken by architects in the garden surrounding the house, and often designed by them; and he could not help thinking that the term "formal garden" was rather overdone, and very much misunderstood, not so much among architects, but amongst their clients and the public generally. The formal garden they were striving for, and hoping to see more usually adopted, was the formal garden of England, not the formal garden of Holland or Italy. Though he had been to Holland, he could not say he had seen many gardens there at all. But the Dutch garden was stiff and unsatisfactory. The formal garden of Italy was largely of plan, of intricate beds, and of numerous paths; but what they desired was the formal garden of England—the gardens of Hampton Court Palace on the river side, and the garden of Hatfield—such as was left of it—and the garden of English homes of which numerous fragments remained—gardens with high hedges and long walls, gardens with wide and sloping lawn, not turned into tennis lawns, but lawns to look at and to walk on. The question how far the garden should be cut off from the general grounds must naturally affect all that they did. Mr. Sedding, in his delightful book, said that he thought gardening disappeared when the ha-ha fence was discovered, which seemed to open a possibility of bringing the park right up to the house, so that they did not know where the garden ended and where the park began. That was perfectly true, and one recognised what a disastrous effect it had had upon the garden. On the other hand, Mr. Austin, the Poet Laureate, who, he thought, had written as delightfully on gardens as anybody in the world—and he hoped they would be favoured with more books from him on gardens—quoted from a book recently written which advocates a boundary line being placed between the garden and the house as a necessity, and for choice a good high wall; and Mr. Austin went on to say that that was an idea that could only have emanated from the brain of an architect, who naturally went in for bricks-and-mortar. He (the speaker) had not been able to discover exactly that passage, although he imagined he knew the book referred to; but he had also seen a notice from a paper called *The Garden*, in which it was said, in a somewhat sneering way, that architects were now taking notice of gardens, and that their one idea of a garden was a square plot of land surrounded by a high brick wall; and *The Garden* had promises to publish examples of gardens by builders on those lines. He was sorry to say he had not seen any of those illustrations, but hoped to do so. He thought, however, there must be some mistake about all this. He did not believe that architects wished to surround the house with a square brick wall and put a garden in the middle of it, though he was not sure that even Mr. Milner had not some idea that they wished to do something of the kind. He could not think how the idea had got about. They certainly were not afraid of walls near the house, or of hedges; and that these should be introduced into gardens seemed to him most desirable and natural. Mr. Milner said, in reference to court-yards of houses, that the wall should be only three feet high, and he (the speaker) only mentioned it to give Mr. Milner a chance of saying he meant to say nine or ten feet, because

a court-yard with walls only three feet high would, in his view, not be a court-yard at all. He had had the good fortune to be brought up in a house with an old garden which had square walls and lawns, and a beautiful view, such as he had described, with china seats, and with grass walks under filbert-trees, and a low terrace; and he must say that, though he did not understand it then, that garden had left an impression upon him which other gardens had not done. While he was still a boy an extension had been made to this garden, and the extension was called a wilderness; it had sweeping walks, and was carried out on entirely different lines from the rest of the garden, but it never attracted the children to go into it; they always preferred the long stretch of lawn and the inviting walks, with their seats and arbours and attractions of that sort. He felt it very presumptuous in him to say anything about a garden in the presence of Mr. Milner, but he might say that it seemed to him that the principal things to aim at in laying out a garden were sun and shadow, mystery and design. Mr. Austin, in *The Garden that I Love*, gave four or five pages to a delightful description of his idea of a garden, which was not a strictly formal one, and he also added a short poem, called, he believed, "Had I a Garden," in which he described his idea as to what a garden should be. It began, "Had I a garden, it should lie all smiling in the sun"; it was hardly necessary perhaps to insist on this, except that it was not always done. It was, however, essential that the garden should be on the sunny side of the hill; that the entrance to the house should be, if possible, on the shady side; through it might be a court-yard, somewhat grim and shadowy, which led into the house and on to the sunny lawn and garden, where one's guests at once felt at home and happy in the sun. Anybody who lived in a house with a garden on the north side of it would live a miserable and wretched life. Then the poet went on: "Had I a garden, alleys green should lead where none could guess." That was the mystery of the garden, as he had always thought of it; that there should be paths that should lead somewhere not visible at the first onset—not an intricate series of little pattern walks which troubled and bothered one, but straight, wide alleys green which led somewhere, probably to some pleasant seat or some beautiful view. Those alleys would not interrupt the general view, and would not shut in the garden altogether. Then, again, "Had I a garden, it should grow shelter for feeble feet." This was the shadow so missed in Dutch and Italian gardens. The formality of the garden should be more in its plan than in its section; that the tall trees and tall flowers might be altogether free and natural, but that they should be placed in some regard to the general arrangement. Another thing, the garden should have design, and that design should be to some extent apparent. Mr. Austin, again, said that man was "designed to design," and a garden being man's work, man's hand should be visible in it. Attempts at naturalism in a garden led to disappointments. It must not be too transparent, but one must see that it was arranged with an object: to catch the view, to catch the sun, to provide shelter for the people, to provide seats, or to provide walks, and so forth, and for trees and flowers to grow in. They were all very much indebted to Mr. Milner for his Paper, and, speaking for himself, he had spent so many delightful and happy days with him, going over grounds which they had finally made for better or worse, that he was very glad to have seen him among them, and to have had the advantage of listening to his Paper.

MR. H. HEATHCOTE STATHAM [*F.*], in seconding the vote of thanks, hoped that Mr. Milner would not think that he did it with any less sincerity, because he did not altogether agree with him. At present, people were in a state of reaction with regard to the question of the formal and informal garden. For a long time, until perhaps twenty years ago, the formal garden had been discarded as an old-fashioned thing that was done with; and the natural garden had come into vogue. Now, a movement had been taken up by some clever enthusiastic people who were disposed to go to the other extreme, and to have gardens so formal that they seemed almost like carvings. Mr. Milner, he was aware, had no sympathy with that, and so far he (the speaker) agreed with him. He did not think that hedges and trees clipped into artificial shapes really belonged to the proper subject of the formal garden. Reference had been made to Hampton Court. Hampton Court as it now stood was almost an ideal specimen of a garden in connection with a house; but, if they looked at the old engravings of Hampton Court as laid out at first, it was a totally different thing: the semicircular part in front of the Palace was laid out in exactly formal little patterns of box hedges of a most intricate and elaborate kind. That had been all done away with now, and any advocate of the extreme formal garden who looked at Hampton Court as it was now, and then looked at the old engravings as it was laid out, could not but admit that it was a far more pleasing object in its present form; it was formal enough, but not too formal. One little point rather amused him in reference to the entrance into the drive from the public road, for he observed that Mr. Milner had not been quite so confidential with them in this Paper as he was in his book, where he let them into a little trick. He said: "In making an entrance from the public road advantage should always be taken of a bend in the road such as would make it appear that the main road

led up to the estate." Since he read that, he had looked out, in taking country walks, and had been amused to find how often that little dodge had been carried out; but he did not think it a very respectable one. He was glad to find that Mr. Milner had fully admitted the necessity of the formal treatment of the garden in immediate connection with the house. Fifty years ago that was not admitted; now it seemed that the people on both sides of the question, both the formal and informal, were inclined to admit that. He agreed with Mr. Milner thoroughly so far. But he disagreed with him where his walks began to wriggle. In the plan No. 1 [p. 187], there was a formal terrace before the house, and the formal garden a little way from it. Between that there were walks laid out that were not walks at all, but irregular curves, serpentine in shape, with knots of bushes planted inside the curves, which suggested the old question in creation of which came first, the egg or the bird. Were the knots of bushes put there first and the walks then carried round, or were the curved walks put there first and the bushes planted afterwards to look as if there were something to go round? Either way it seemed to him rather illogical. With regard to the whole process of what was called landscape-gardening, in the sense of carving a sort of picturesqueness out of the ground and planting trees to make what might be called an artificial accident, he was sorry to say he had a rooted conviction that that was all a delusion—that it did not give pleasure, for one always found that it was a contrived thing, a thing contrived to look like accident—and that, he thought, was a contradiction in terms. It appeared to him that Hampton Court was just a model of the way in which a garden and the park outside the garden should be treated. The garden was formal—formal in detail as well as in its main plan; the beds of flowers were arranged in a formal way, which presented a beautiful appearance in the bright sunshine. When one came outside the garden boundary one came to the park, which was found to be still formal, but in a larger and less detailed manner. The alleys of trees radiated at certain definite angles, with no pretence whatever of being natural. It was an artificially created thing, and it was laid out so as to show that it was artificial, and in his opinion the landscape-gardener, as long as he was within the boundaries of the park, had got to be artificial. It was no use making a landscape pretend to be an actual landscape which was to imitate the beauties of nature, and yet, when one began to analyse it, one found it to be all contrived. So soon as one found out that, one's satisfaction in it disappeared. A rather amusing thing was recalled to him by a remark Mr. Milner had made about the use of light-coloured and dark-coloured trees to give effects of nearness or of distance. He would not quarrel with that; he had done quarrelling with Mr. Milner; but it reminded him of the use made of that by Shenstone, the poet, who had a curious fancy for little artificial effects. He had a very small garden, but he wanted to have a long avenue; so he planted an avenue with the sides converging to make an artificial perspective, breaking it with a bay half-way down, ending on the nearer side with large trees of rather dark colour, and then when it came round again began with small trees of a light colour, so as to give the impression that the break was very large; and he ended with a miniature summer house, too small for anybody to go into, and painted in delicate tints to give an effect of distance. The Nemesis which overtook Shenstone was that the Lyttletons, on the next estate, used to bring their friends to the boundary to look at Shenstone's perspective from the wrong end!

Colonel LENOX PRENDERGAST [*H.A.*] said he should like to associate himself with previous speakers in offering a vote of thanks to Mr. Milner for his most interesting Paper. He ventured to think that when they could read that Paper in the Journal they would find it full of most valuable information. The subject touched the Institute more nearly than people were inclined to believe. Each generation had to deal with the great difficulty of making an English home more charming than it was before; and, if one could only throw one's mind back fifty years, it would be recollected that in all the great homes of England it was the fashion of that day to have a great field up to the door and windows of the house. Fifty years ago there was a certain great lady, the Duchess of Sutherland, the mother of the late Duke, a woman of great taste brought up at Castle Howard. When she went to Trentham, in the middle of England, she set to work to create an Italian garden, as they called it. Splendid as it was then, and splendid as it is in the present day, one knows that that bedding-out business is utterly worn out and done for. The result of all this is that, as in England people always divided themselves into two parties, no matter what the subject, we had got both the formalist and the free-hand systems; and what he liked about Mr. Milner's Paper was that he had fallen in with this English feeling, and had gone a little between the two. He honestly thought (whatever his opinion might be upon other subjects) that the garden question could only be treated in the present day by some such process. Of course, in the Institute he assumed that to-night the remarks were chiefly directed to new buildings with new surroundings; it was very seldom that an architect was called upon to have anything to do with laying-out the grounds, or suggesting their plan, where old mansions were concerned; but with the new mansions the arrangements probably emanated from members of the Institute. What was the position now?

Almost within their own recollection the houses of England, instead of being placed in the hollows or flats, were nearly all now placed high up on the hill-side. This at once altered the whole method of treating the grounds round them. That, he believed, was a complete change in principle. Of course, the chief rooms would look south probably, or some variation of it; and the ground must fall away from it; how was it to be dealt with? The builder would of course like everything taken out from the foundations to be thrown into the form of some terrace that he fancied, and there would be an end of it. But it was much more important than that; and he ventured to think that a suggestion made by Mr. Aston Webb was the true solution that the landscape-gardener should be called in in the first instance—not to design the ultimate arrangement of the ground, but to give a general idea how he proposed to deal with this superfluous material. Of all mistakes perhaps the greatest was for anybody to lay down cut-and-dried rules as to how they would lay out the grounds till they knew what the house was like. He was convinced that even that terrace which the digging out was to help to form must not be actually concluded till the house was up, and the occupant knew what he was looking at. An enormous advantage in these days is the general use of the bow window. By this means there was a chance of creating a view of garden land such as no other period had possessed, and it was worth while just to consider the lie of the ground piecemeal, rather than through a cut-and-dried plan which might be all very well in the mind of the architect and the landscape-gardener, but not to the taste of the persons who were going to pass their lives there. One thing particularly he thanked Mr. Milner for: he had said perfectly plainly that the proper course was to steer between the two extreme parties—formalist and the free. He should like to quote on this point from that charming book of Mr. Sedding's, *Of Garden Crafts, Old and New*, which he hoped everybody would look at: "It is of the utmost importance that art and nature should be linked together, alike in the near neighbourhood of the house and in its far prospect, so that the scene, as it meets the eye, whether at a distance or near, should present a picture of a simple whole, in which each item should take its part without disturbing the individual expression of the ground. To attain this result, it is essential that the ground immediately about the house should be devoted to symmetrical planning, and to distinctly ornamental treatment; and the symmetry should break away by easy stages from the dressed to the undressed parts, and so on to the open country, beginning with wilder effects upon the country-boundaries of the place and more careful and intricate effects as the house is approached." Further, he would like to call their attention to an article in the *Edinburgh Review* last July on this subject, which, in his opinion, was the best thing which had been written on the subject.

Mr. JOHN HEBB [*F.*] remarked that it had been suggested that the architect and landscape-gardener should be in accord. He agreed with that suggestion, but remembered that a landscape-gardener, having been called in in connection with a house with which he was associated, did not confine himself to landscape gardening. The house itself was a classic house, but the landscape-gardener designed a lodge to the house in what used to be called the "old English style," with lattice-windows and oak barge-boards. The landscape-gardener should confine himself to his own business, and not encroach on the business of the architect.

The PRESIDENT, in putting the vote, said they were extremely obliged to Mr. Milner for his very excellent Paper, and also to the Hon. Miss Amherst for her remarks on the subject. Every one born in England must have more or less taste for a garden, whether it were a formal one, or whether it were a natural one. He should like to pay one compliment to Mr. Milner—that he was so extremely modest. He (the President) always understood that the landscape-gardener considered himself master of the situation, and that when he was called in, whether to a garden, or to land on which a house was to be built, he said that that was of no importance: let him lay out the garden, and, when he had satisfactorily done that, he could always build the house, or recommend a man who would build a house that would accord with the garden! There was a great charm about what it was the fashion to call the formal garden; he did not know whether Milton, when he wrote—

> And add to these retirèd leisure
> That in trim gardens takes his pleasure—

meant the formal garden, or whether he meant one that was nicely kept. However, there was certainly something delightful in seeing a bit of this formality, those cut yews and cypresses especially, in a cottage-garden in some country village, where they formed such a contrast to the natural wildness, and also gave a look of humanity to Nature herself. All the trim gardens now to be seen were nothing to the trim gardening of the Romans, from whom we had got this as well as most things pertaining to our civilisation, being, as we once were, a mere tiny fragment of the Roman Empire. That formality was carried out by them to an excessive degree, for one read of trees being cut into the shapes of animals; and one of the prettiest of Martial's epigrams tells how a little boy who was going into the garden was daring enough to put his hand into the bear's open mouth; but, unfortunately, a serpent had got there and stung him, so the bear was his end. Mr. Milner's Paper

must prove most useful to every architect; for there could be hardly one who had not had a house or a cottage to build in the country, perhaps one of those cottages of gentility that were inhabited by people who had not always been accustomed to cottages, where a garden formed its greatest delight.

MR. H. E. MILNER [*F.*], in reply, said he had had a certain difficulty in writing his Paper, for he was uncertain whether he should discourse on the art part of the question, or whether it would be more useful to members of the Institute to put before them the more detailed work of the practice; but he found his present task more difficult still. On the one hand one of their greatest authorities on art had stated in that room that it would be nice, pleasant, and delightful to see a cut bird next to a little cottage. That, he thought, was paraphrasing somewhat the President's remarks. They had also had a statement from a gentleman, who had certainly studied gardening, and for whom he had the greatest esteem. Mr. Statham insisted that all the formality should extend, not only close to the house, but should form the whole of the garden. Now where was this happy mean where such authorities differed? Then, again, they had Mr. Aston Webb—whom he had always considered most moderate—who was advocating the formal garden to extend in a greater direction than certainly he should advocate. As he had tried to explain, the formal garden (and he quite recognised that this was a misnomer, but for want of a better word he used it now) should extend and form the platform of the house. But then there was something far more beyond this. The platform of the house passed, one must at some time or other get to the natural treatment of the ground. He thought Colonel Prendergast had made the most important point, and one which he had omitted in his Paper, and that was that the houses were now placed on the hills or on the hillside, whereas formerly they were placed on the flat ground. The only rational way of treating the grounds of any place was to adapt one's plan to the natural site. It was unwise and almost impossible in an undulating district, or on the hillsides, or on the top of a hill, to form an English formal garden such as Hampton Court. In his opinion Mr. Statham was certainly right in what he said as to the alterations that had taken place in Hampton Court, and the great improvement effected; and he himself certainly admired Hampton Court. At the same time the avenues there were made when there was not that surrounding fringe of houses that there was now, and many of them certainly led from nowhere to nowhere; and if that Hampton Court plan had been on a hillside the result would have been ridiculous. He maintained that one must adapt oneself to the place in all one's work. It was very gratifying to hear such kind words from Miss Amherst, for one and all recognised what an authority she was on gardening. He certainly felt with Mr. Aston Webb that the architect and the landscape-gardener should work hand-in-hand from the commencement. The work of the landscape-gardeners (in spite of what one heard as to the dealings of former persons practising that art) consisted in being able to form in their mind a picture of how the ground would look exactly when they had finished with it, and in being able to carry out their ideas. In his own practice certainly he always tried to induce the architects to carry out into the gardens more of their architectural work, and he did feel very strongly that this subject had been neglected very much. It was all very well to talk, too, of the formal garden of the plan; but the hedges would grow, and would cut off the views. He did not know of any formal garden over eighty years old, at any rate, that retained anything of its former ideal character. Look at the old print of Fair Lawn, one of the best preserved places in England [p. 189]. What was the result at the present day? Those yews were now leggy trees, some forty or fifty feet high, with a dozen leaves on the top trying to get a breath of fresh air and a little sunlight. The whole design was spoilt; in fact, there was none to be seen, and it must be so. The old gardens, really very old gardens, had a picturesqueness in the growth of the trees themselves; but that was not owing to their design, that was owing simply to the beauty of the trees themselves. He thought they had given up the story of the enclosure by architects, but he could point to works by well-known names, at any rate, where the statement was distinctly made on behalf of architects. [MR. ASTON WEBB: With a high wall round?] Yes, certainly; he could give them chapter and verse for it. Mr. Aston Webb had spoken about the court-yard. He should be very sorry to see a court-yard wall nine or ten feet high all round the north side of the house. The walls must necessarily be high, if they were to enclose offices or outbuildings, or to provide shelter; but surely they would like to have a peep into the park on the north and north-west sides through the court-yard. He did not think a court-yard with walls nine or ten feet high and, say, 100 feet square would be a very pleasant place to live in or to walk about in. He should say that the walls really of the forecourt, at any rate on its northern side, should not be more than the size that he mentioned.

9, Conduit Street, London, W., 18*th February* 1897.

CHRONICLE.

Mr. Milner's Paper.

A glance at the indexes of the Transactions, from the first volume down to that recently completed, reveals the fact that until last Monday the subject of landscape-gardening had never before been dealt with at a Meeting of the Institute. Mr. Milner, the author of the Paper read on Monday, made his first appearance as an Hon. Associate, and met with a very hearty reception. The Hon. Alicia Amherst, who opened the discussion, is the author of the charming and interesting volume entitled *A History of Gardening in England*, which has been declared to be the most complete history of English gardening we possess. The work, a copy of which has been very kindly presented to the Library by Miss Amherst, will be reviewed in an early issue of the Journal.

The Prizes and Studentships 1897-98.

The pamphlet giving particulars of the subjects set for the Institute Studentships and Prizes 1897-98, with conditions of competition and award, is now in the press, and will be ready for issue with the next number of the Journal. Meanwhile the following *précis* will be useful to intending competitors:—

The Essay Medal and Twenty-five Guineas.—*Subject*: "A Review of English Architecture of the Nineteenth Century." Competitors must be British subjects under forty years of age.

The Measured Drawings Medal and Ten Guineas, open to British subjects under the age of thirty.—Competitors must submit their own measured drawings of any important building, classical or mediæval, in the United Kingdom or abroad.

The Soane Medallion and £100, open to British subjects under the age of thirty.—*Subject:* Design for a Concert Hall to seat 2,000 persons, including a small Chamber Concert Hall to seat 300 persons, on a corner site.

The Pugin Studentship (Silver Medal and £40), open to members of the profession (of all countries) between the ages of eighteen and twenty-five.—Candidates must send in selections of their own drawings and testimonials. Preference will be given to measured drawings and sketches of the works of the Middle Ages.

The Godwin Bursary (Silver Medal and £40), open to members of the profession without limit of age.—The object of the Bursary is to encourage the study of works of modern architecture abroad, and candidates must submit selections of practical working drawings, or other evidence of special practical knowledge, and testimonials. The knowledge of at least one foreign language is a necessary qualification.

The Owen Jones Studentship (Certificate and £50), open to members of the profession under the age of thirty-five.—Candidates must submit testimonials, with specimens of their drawings showing knowledge of colour-decoration as a means of architectural expression, and compositions in writing exhibiting acquaintance with the leading subjects in Owen Jones's *Grammar of Ornament*.

The Tite Prize (Certificate and £30), open to members of the profession under the age of thirty. *Subject:* Design for a Villa and Ornamental Garden in England in the Italian style, the house to contain four reception-rooms, twelve bedrooms, kitchen, and usual offices; the whole comprised on a riverside area of two acres, not necessarily level.

The Grissell Prize (Gold Medal and 10 guineas), open to British subjects who have not been in professional practice longer than ten years.—*Subject:* Design for a small Country Church, to seat 200 people, to be constructed entirely of timber, with shingle roof.

The Aldwinckle Studentship (Certificate and £50), for travelling and sketching in Spain, will be awarded to the person who, among all the competitors for the year's prizes, the Council consider will best carry out the donor's intentions. This is the last of the three Travelling Studentships generously placed at the disposal of the Council by Mr. T. W. Aldwinckle [*F.*] in 1895.

The Ashpitel Prize (books value £10 10*s.*): awarded to the Student who most highly distinguishes himself in the Final Examinations 1897.

The Arthur Cates Prize (books value £10 10*s.*). This prize will be given by Mr. Arthur Cates at each Final Examination until further notice to the *Student* (successful in passing the Examination) whose testimonies of study, completed in accordance with the present programme, are considered by the Board to best merit the prize.

The Carpenters' Hall Lectures on Building.

The annual course of lectures on matters connected with building, held at Carpenters' Hall under the auspices of the Worshipful Company, opens on the 24th inst. with a lecture by Professor T. Roger Smith on Our Ancient Cathedrals, when the President, Professor Aitchison, A.R.A., will preside. On the 3rd prox., Lord Reay presiding, Professor Fleming, F.R.S., lectures on the Work

of the Electric Current, with the aid of lantern illustrations and experiments. On the 10th prox. Professor Banister Fletcher discusses the question "Is a National 20th-Century Style of Architecture probable?" with Sir John Lubbock in the chair. On the 17th, Professor J. M. Thomson will treat of the Chemistry of certain Metals used in Building Construction, Sir F. Abel presiding; and Mr. J. Wright Clarke follows with a lecture on Practical Plumber's Work on the 24th prox., when Sir Stuart Knill presides.

The late Mr. G. P. Boyce, Artist.

The cycle of distinguished men which surrounded D. G. Rosetti has been further diminished by the death of Mr. G. P. Boyce, a member of the Royal Society of Painters in Water Colours, who passed away, on the 6th inst., in a house which he built for himself in Glebe Place, Chelsea, from the designs of Mr. Philip Webb, almost under the shadow of the tower of old Chelsea Church.

Mr. Boyce was originally intended for an architect, and was articled to the late Mr. Thomas Little (born 1802, died 1859), an architect of some repute and a skilful draughtsman, who designed St. Mark's Church, Regent's Park, St. Paul's and St. Saviour's Churches, Warwick Road, Paddington, Messrs. Gillows' premises in Oxford Street, and other buildings in London. On the completion of his articles he passed some time in the office of Messrs. Wyatt & Brandon, but his bent being more imaginative than practical, he relinquished architecture, a pursuit for which he was but little suited, and devoted himself to painting, selecting usually subjects in which landscape and buildings were combined. Although well known and appreciated by his fellows, Mr. Boyce's work was but little known to the general public until the collection of the late Mr. Barnes, of Durham, was sold by auction at Christie's. Mr. Barnes had been a liberal patron of Boyce, and two water-colour drawings in this collection disclosed the artist as a master of his craft. These drawings were a large study of Edward the Confessor's Shrine at Westminster, which was purchased by Mr. Boyce, and the Tithe Barn at Bradford-on-Avon, which was purchased by the Department of Science and Art, and is now in the South Kensington Museum. Mr. Boyce was very intimate with William Burges, and occupied chambers on the same landing at No. 12, Buckingham Street, overlooking the Thames. He removed thence to Chelsea, where he occupied a quaint red-brick house with a large garden attached. The plan of this house, which is skilful and original, is due to Mr. Boyce, but he left his architect a free hand in other matters.

Additions to the Library.

The late John Addington Symonds's *Life of Michelangelo Buonarroti*, based on studies in the archives of the Buonarroti family at Florence, has recently been added to the Reference Library. [London: John C. Nimmo.] The first edition of Mr. Symonds's work, published in 1892, was exhausted in three months. The copy which has come into the possession of the Library belongs to the second edition, published some six months later, and contains the author's reply to his reviewers in a series of notes at the end of the second volume.

The London Health Laws: a Manual of the Law affecting the Housing and Sanitary Condition of Londoners, with Special Reference to the Dwellings of the Poor, a little handbook issued by the Mansion House Council on the Dwellings of the Poor, contains the sanitary provisions of the Public Health Act for London (1891), the Metropolis Management Acts (1855–87), and other information of considerable value to householders. [London: Cassell & Co.] Three members of the Mansion House Council—Mr. Chance, Mr. Craies, and Mr. Hodge—are responsible for bringing the matter of the present edition (June 1894) into conformity with the latest legislation on the subject.

An important donation has been made by Mr. W. W. Wardell [*F.*] in *Le Nouveau Théâtre d'Italie, ou Description exacte de ses Villes, Palais, Eglises, Principaux Edifices, &c.*, four large folios, bound in two volumes, forwarded by the donor at his own expense from Sydney, N.S.W. The work, which is in excellent condition, was published at the Hague in 1724, and the four books, containing innumerable engravings, deal respectively with *La Lombardie, L'Etat de l'Eglise, les Royaumes de Naples et de Sicile*, and *Rome Ancienne et Moderne*.

Repeated inquiries for Mr. Statham's *Architecture for General Readers* (which has gone into a second edition) has necessitated an additional copy being obtained for the Loan Library, from which it may now be borrowed [London: Chapman & Hall].

The principal contribution to the current number of the *Architectural Record* (vol. vi. No. 3) is a fully illustrated article by Montgomery Schuyler on the works of Henry Janeway Hardenbergh. Mr. Barr Ferree, in the same number, continues his series of articles on French cathedrals, the present one being devoted to the Cathedrals of Provence; Mr. Jean Schopfer writes on Modern Decoration, and Mr. Reynolds contributes a delightfully illustrated paper on the Villas of Rome.

"The Architecture of Our Government Buildings" (United States) is the title of the usual article devoted to an architectural subject in the *Engineering Magazine* for February. Numerous examples are illustrated.

The *Journal* of the Royal Society of Antiquaries of Ireland contains part II. of Mr. T. J. Westropp's paper on "Prehistoric Stone Forts of Northern

Clare," a Paper on the Priory of Inistioge, by Mr. R. Langrishe, and contributions by Rev. Professor Stokes and others.

Mr. Ralph Nevill has presented the Indexes of the Archæological Papers published during the years 1891–95, a yearly compilation extremely useful for reference, published under the direction of the Congress of Archæological Societies in union with the Society of Antiquaries.

REVIEWS. LI.

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THE SYMBOLISM OF THE WHEEL.

The Buddhist Praying-Wheel. A Collection of Material bearing upon the Symbolism of the Wheel and Circular Movements in Custom and Religious Ritual. By William Simpson, R.I., M.R.A.S., F.R.G.S., Hon. Associate R.I.B.A., &c. 8o. Lond. 1896. *Price* 10*s.* [*Messrs. Macmillan & Co., Ltd., 29-30, Bedford Street, Covent Garden.*]

The author of this work, a well-known Honorary Associate member, and a frequent contributor to these columns, has devoted himself energetically to his subject. The Buddhist Praying-Wheel would, at first sight, seem to lie altogether outside the widely comprehensive science and art of architecture. We may readily picture to ourselves the mechanical contrivance of the "wheel of fortune" at a fancy fair, or the gigantic wheel of elevation at Earl's Court, or the small toy for children's amusement; but what a wheel can have to do with either architecture or religion we may well be at a loss to surmise. We may, however, here in our own country, recognise an intimate connection between prayer and architecture. We need special places of habitual resort for worship and prayer, and we need that they should represent something more than the ordinary commonplaces of earthly life. We need to make them such as to manifest our sense of the great duties we there enter upon, and of the Great Being whom we desire to worship with every sign and symbol of external reverence. Under the light of Revelation we especially need them as embodying the truths of Christian belief.

But the Buddhist, besides his temple, needs something different as expressing his belief, which seems to recognise the existence of an Almighty and Eternal Deity, and of various subordinate deities also. His instincts or his traditions lead him to offer adoration rather than prayer, and he traditionally employs a mechanical process to express his votive offering. This votive offering is accompanied with what is called the "Mantra," or form of words expressive of adoration, which is inscribed on or deposited in a wheel or cylinder, which ordinarily is turned by the devotees who repeat the words.

The "Mantra" is any word or form of words that may be regularly used for invocation or consecration. The prayer-wheels, whatever may be their size or form, are filled with paper or cloth, on which is repeated as many times as can be written a Mantra, it may be, of the following words: "Aum! Mani Padme, hung!" For the interpretation of this, and for the many modes and intentions in the moving of the wheels, the reader must study Mr. Simpson's pages. In some instances a mechanical contrivance has been devised which will work automatically with water, or even with smoke. These, in fact, are to serve for a continual perpetual reminder of their religious duties, and their dependence upon the unseen Powers in which they profess their belief. These religiously rotating machines are devised in the most remarkable varieties. Those which are on a large scale sometimes exhibit an architectural character, and sometimes an architectural structure. The volume under consideration forms an interesting and excellent compendium of the wonderfully varied forms the author has met with, together with the mode of use by the people generally, but especially by the members of their monastic orders, which are very numerous, and pervade all ranks and classes. We are told, however, that the term "prayer-wheel," which has been generally given to it, is not properly descriptive of its purpose and use. Strictly speaking, no prayers are made, only a mechanical mode of adoration is signified upon the *opus operatum* principle, the turning of the wheel being intended as an act of penitential or of meritorious service, as well as of adoration. The historic character and origin of the system are elaborately investigated, as well as its physiological aspect. Its grand principle would seem to be an intention to progress on the same lines as the universe itself. The universe in which we dwell, so far as we know anything of it, is a system of rotation. The rotatory acts of common daily life are but the reflex of this vast pervading principle. The greater the regularity of our daily life—in our meals, in our work, in our recreation—the greater our prospects of continued prosperity, health, and longevity. The regular recurrence and observance of religious acts and duties must at the same time prove a necessity of, as well as an incitement to, a regular, consistent, systematic maintenance of religious life.

In the Buddhist theory the turning of a horizontal wheel in the right direction is of the first importance, the "right" direction being that of the course of the sun—going round the wheel *with the right hand to the centre*. The reverse way is considered indicative of ill-luck, misfortune, or death, and various illustrations are given as showing the ills attendant on the "reverse way," whether accidentally or purposely so turned. The wheel being one of the most common and obvious emblems of the sun, it is suggested that the wheel indicated the absorption of the ancient sun-worship into Buddhism. And our author quotes Cunningham as saying, in his

work on Bhilsa Topes, "The symbol of Buddha was, I believe, the wheel, which in its revolution was emblematic of the passage of the soul through the circle of the various forms of existence. Hence the wheel, or the whole circle, was typical of any one who, after obtaining the Nírvâna, or emancipation from this mortal coil, had *completed* the circle of his existence, and was no longer subject to transmigration." And the symbolism of the wheel is of universal application, indicating the sovereignty of thrones, the perfection of truth, the order of law; and a large mass of metaphysical and allegorical matter is dealt with, and nearly all countries and peoples come into the category.

By no means the least interesting part of the book is to be found in the "Additional Notes," showing the extensive existence of a solar mythology which also pervades the metaphysical system of Buddha, the wheel being "the emblem of rule and government with all Hindus." "The epithet apratihata-Chakra, 'he whose wheel [*i.e.* rule] is unopposed,' is commonly given to kings in the inscriptions," and there is a large Oriental significance in the driving of cars and chariots. The origin and symbolism of the circular movements in Brahmanism and Buddhism are shown to be distinctly solar. For the origin of the wheel our author might find some interest in the "Tarat of the Bohemians," the most ancient book in the world, treating of the "Occult Science," wherein the Hebrew letter Yod, shaped like a comma or a dot, represents the *principle* or *origin* of all things, the other letters of the Hebrew alphabet all being produced by different combinations of this letter. The ancients used a dot in the centre of a circle to denote the "Unity Principle," according to the doctrine of the Kabbalists, the circle representing eternity—a line without beginning or end. "The turning of a wheel and a barrel at midsummer was at one time a solemn State ceremony in the French capital, at which the King alone could apply a light to the fire" [Guidoz]. Then various wheels are treated separately—as the wheel of fortune, the wheel as an amulet, the wheel of God, the wheel of the law, and the wheel and thunder, which become rather extraneous to the real subject of the book. All wheel-like ceremonies and customs are said at one time to have presented a religious aspect. As early as the time of the Vedas the path of the sun had become the type of the "right movement," and so it came to express all that is right, and good, and true. Cords, even, were twisted "sunwise."

Amongst the Gauls, Teutons, and Celts, especially in Scotland and the Western Isles, the author relates a great number of curious customs in circumambulating around altars, hills, cairns, and other localities; and also of the lighting of midnight fires in honour of the sun, which in Ireland and Cornwall have continued down to the present century, as formerly all through the British Isles. All tend to show that the sun-wise course, called the "Deisul," was the all but universal custom—*i.e.* going from east to west by the south, and returning by the north, these all indicating, proving, or seeking good luck and prosperity. He quotes also from Grimm's *Teutonic Mythology* to show the solar origin of the wheel, and its universality is again illustrated. The wonderful amount of harmony in these accounts and the usages of "need fires" themselves point back to a very high antiquity. The wheel seems to be the emblem of the sun, whence light and fire proceed. The whole subject is suited to the ethnologist rather than to the architect. It is an interesting and novel subject to the general reader, in spite of its being written in so discursive a manner as to become in some places somewhat tedious through repetition. The same facts are brought forward in a great number of different connections, dwelling again and again on the direct or the reverse turning of the wheel, or going of circumambulations. The "direct" course relates of course only to the northern hemisphere in which the sun goes round by the south, and not to the countries in which he passes by the north. We have a vast collection of historical descriptions and theories, from which the writer leaves us to draw our own conclusion. The subject has been treated in a comprehensive but by no means an exhaustive manner. It is specially suggested that the reader should draw his own conclusions from the facts given, and should make further investigation into the details of the whole subject as opportunity offers. A list of some 200 books which have been consulted, and a copious index of some 600 references, will be sufficient indication of the mass of matter comprised in the volume.

WILLIAM WHITE, F.S.A.

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IRON AND STEEL CONSTRUCTION.

Constructional Iron and Steel Work as applied to Public, Private, and Domestic Buildings: a Practical Treatise for Architects, Students, and Builders. By Francis Campin, C.E., author of "Materials and Construction." With illustrations. 8o. Lond. 1896. Price 3s. 6d. [Messrs. Crosby Lockwood & Son, Stationers' Hall Court, Ludgate Hill.]

Some books seem to connect themselves with certain periods of our life, and to the middle-aged architect "Weale's Series" brings back the thoughts of his youth, when the first books put into the hands of the articled pupil were Dobson's *Art of Building*, and others of that well-known series, the latest addition to which is Campin's *Constructional Iron and Steel Work*. In reading this work one is brought back in thought to those dear old days when the architect's scientific education was of the most elementary character, and when

it was not compulsory to pass an examination prior to becoming a member of the Institute. The book is written in the same light and general manner as the older works of the series: it is full of general information, yet without that precision which one finds in a modern scientific work, and hardly with that clear demonstration one looks for from such an authority as Mr. Campin.

In the introductory chapter, the shortest in the volume, the author points out, with great truth, that one effect of the present use of iron in lieu of brick and timber is the greater accuracy required in the preparation of drawings, as there is not the same facility for increasing or reducing the length of iron joists and posts as there is with timber or brickwork. This remark he emphasises again towards the end of the book (p. 240), where he says that "if any difficulty arises, neither the builder nor the contractors for the steel and iron work will be prepared to stand the loss ensuing, and the architect will be slow to certify for extra payment, although the variation may have been due to the inadequacy of his contract plans."

He points out also what must be evident to most architects, although one seldom sees it in print, viz., that it is unscientific to rest a bressummer partly on an iron storey-post and partly on brickwork—in opposition to the requirement in section 56 of the Metropolitan Building Act—as there is no shrinkage in an iron stanchion, while almost invariably there is more or less settlement with brickwork.

The first chapter after the introduction treats of wrought-iron, cast-iron, and steel as simple materials. Somehow the description seems old-fashioned in style and wanting in clearness, though the general matter is good, and well deserving the attention of the student.

The second chapter treats of cast-iron stanchions and columns, and would be very useful to the student if it were only more precise and "up to date." The author explains clearly and fully how girders should be carried on stanchions where these are continued from floor to floor, and he rightly denounces the common error, where a girder is required between two stanchions directly over each other, of resting the girder on the head of the lower stanchion, and bolting the upper stanchion on to the girder. He shows the faults in this method of construction, and gives several illustrations of the boxes or stilting which should be used in such conditions. In plate 1 several plans are given for cast-iron stanchions, but the two he recommends, M and N, are far from good examples. The example M has a line of wall frontage drawn half a brick's thickness in front of the stanchion, instead of in the same line as the stanchion: there is no advantage in building a stanchion with four inches of brickwork in front of it, and generally it is a positive advantage to have the face of the stanchion flush with the face of the brickwork. The use of the hollow stanchion or square column N recommended by the author is inadvisable, as the one advantage of the open stanchion over the circular column is that every rib of the iron is exposed in the stanchion, thus ensuring good casting; and this exposure of all the parts more than compensates for the extra metal required to make the square-planned open stanchion as strong as the hollow column. On the other hand, in a square enclosed stanchion there is not this corresponding advantage.

The description is rather careless. At page 22 the iron base of a stanchion 11 inches by 9 inches on plan is described as swelling out to over 11 feet super. This evidently refers to the stone base under the stanchion, but the drawing on plate 1 emphasises the description as applying to the iron base. It is this want of precision which troubles students, who are unable to see what is intended behind the vague description given.

The description of wrought-iron and steel stanchions is reserved for a later chapter, under the heading "Manufacture," instead of being placed close to the descriptions of cast-iron stanchions. This is a disadvantage, as it is useful for the student to see when cast-iron is preferable to wrought, and *vice versâ*. Mr. Campin seems to favour cast-iron in almost all cases as preferable for stanchions to wrought-iron, and I agree with him in the advice that it is a mistake to use wrought-iron or steel for the stanchions of ordinary commercial buildings, as it is difficult to make satisfactory connections between the shafts and caps or the shafts and bases, or to adapt the shafts to carry intermediate girders.

Reference is made in this chapter to Gordon's well-known formula, which was not written by Gordon himself, but has somehow become attached to his name. The formula, by the way, is purely empirical and not trustworthy.

Chapter iii. is devoted to girders with solid webs. The information given is good, but the same want of precise accuracy is evident here as elsewhere in the book. A wrought-iron joist is drawn in plate 8 and described on page 44 as being 12 inches deep and having a $\frac{3}{4}$-inch web. One never does see such a web in ordinary use; and it is a pity that greater care was not exercised in revising the proofs, as students are so apt to remember just those points which are not usual or correct. This chapter is perhaps the most important in the book, and well worthy of careful study; but there is not that completeness in it which one finds in other works on the same subject.* It would have been well if some connection had been shown between the mathematical propositions of the

* As an instance of the want of careful editing, on page 66, A is described as "equal to the sectional area of both flanges together in square inches," while three lines further on, in the same sentence, A is given as "equal to the total sectional area of web and flange."—L. S.

author and the ordinary formulæ used by architects and engineers.

The fourth chapter treats of lattice or open webbed girders, and so hardly comes into the ordinary practice of the architect.

In the fifth chapter the author describes the way girders are weakened by improperly cutting off the bottom flange, as is so frequently done in every-day building when a cross girder is fitted into a longitudinal one, and he gives useful instructions as to the way bent girders should be built as staircase carriages and in similar positions. In this chapter, as in the others, there are several small errors which are evident to the practising architect, but which are likely to puzzle the youthful student. For instance, the stone base plate for taking the foot of an iron stanchion (p. 162) is described to be safe with a load of seven tons to the foot—which is absurd, as good stone will take with safety at least three or four times that weight. This chapter opens with a good description of how iron is cast, and the necessity of figuring full-size details as well as drawing the same, because cast-iron shrinks about 1 per cent. in cooling.

The sixth and seventh chapters, on loads and stresses, and the general arrangement of buildings, are certainly the most interesting to the ordinary architect. In the sixth chapter the author shows how to calculate the weight which each pier, or stanchion, or column has to take, and how to calculate the weight on floors and girders. Many a young man in the early days of his practice is at a loss how to go to work in describing what scantling of beam he shall use, and what section and bearing to give his upright supports. This information he has not hitherto known where to find, and it is just this which Mr. Campin has given in a chatty, interesting, and not too technical manner.

The eighth chapter treats of iron doors, and is fairly good as far as it goes; but it would have been far more useful if a little information had been added as to the advice tendered and requirements made by fire insurance companies in connection with this subject.

The last chapter gives a short detailed specification for cast- and wrought-iron, and will be much appreciated by the young architect, as also will the examples given showing how to find the weight of girders and stanchions.

There are two defects which require correcting in future editions, as it is pretty certain the work will have a ready sale. In one part of the book the factor of safety is given dogmatically as one fourth of the breaking weight, in another part as one third, and in another part as one sixth. Some explanation should be given why the factor of safety is varied for different materials, and why it is varied at times even with the same material. There is a valid reason, and it should be fully explained. The other defect is the want of a full index, that supplied being of the barest description' and not doing justice to the contents of the volume, which is a creditable and serviceable addition to the list of works for the special use of architectural students. LEWIS SOLOMON.

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SANITARY SCIENCE.

Sanitary House Drainage: its Principles and Practice. A Handbook for the Use of Architects, Engineers, and Builders. By T. E. Coleman, Surveyor, Royal Engineer Civil Staff. With numerous illustrations. Small 8o. Lond. and New York. 1896. *Price* 6s. [*Messrs. E. & F. N. Spon*, 125, *Strand; Messrs. Spon & Chamberlain*, 12, *Cortlandt Street, New York.*]

A really practical treatise on drainage as applied to houses, apart from the larger questions of sewage disposal and the like (which are the concern of the engineer rather than of the architect), and which could usefully be put into the hands of a student, is greatly needed. The works bearing on the subject are either bulky volumes dealing with the whole question of sanitary engineering, or books which, however excellent in themselves, are written in the interest of particular members of the plumbing trade. The former are too wide in their scope for the student's use; and the latter, for obvious reasons, are not to be recommended as handbooks.

The present volume is certainly the most successful attempt that I am aware of to supply this much-needed want. The author, a surveyor on the Royal Engineer Civil Staff, has a thoroughly practical knowledge of his subject, and writes plainly, and with commendable brevity. He avoids, too, that pitfall for writers on this class of subject—the advertisement of makers of sanitary wares.

On the question of the separation or grouping into distinct sections of the rain-water and the sewage there will certainly be some difference of opinion. Mr. Coleman is very emphatic on the necessity of keeping the rain—or, as he prefers to call it, the storm—water out of the foul water drains, except when it becomes necessary to discharge it into the latter for want of other outlet. It is certainly open to question whether the flushing power of the rain-water ought to be diverted from the drains, which need it most. The argument for separation is based partly on the fact that the branch drains which receive the rain-water from gullies are not usually ventilated, and partly because of the liability of the traps to become unsealed by evaporation in dry weather. The former is a condition easily remedied; the latter is, I think, very much exaggerated.

The chapter on velocity and flow of sewage and the size of drains is a particularly useful one, and should be carefully studied by every learner. One must enter a protest, however, against the concluding paragraph: "In some districts the

by-laws of the local sanitary authority insist upon all the soil drains being not less than six inches diameter. Of course, under such circumstances, the evils entailed by this regulation cannot be avoided." It cannot be too widely known that neither local sanitary authorities outside the Metropolis acting under the Public Health Act 1875, nor similar local authorities in London, have any power to restrict the size of drains in the way referred to. So long as a drain is of sufficient size to do its work efficiently the legal requirements are satisfied.

On the subject of the arrangement of waste-pipes from baths, sinks, and lavatories, it is disappointing to find the author recommending the objectionable plan of discharging into an open hopper head. The condition of a receptacle of this kind, into which soapy or greasy water is being constantly discharged, must necessarily be very foul, and as the hopper head is usually within but a very short distance from a window or windows the system is obviously a bad one. The defects in the book are, however, slight and easily remedied. It is, as I have said, a really valuable and thoroughly practical work, and should be in the hands of every student.

KEITH D. YOUNG.

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HORN-BOOKS.

History of the Horn-book. By Andrew W. Tuer, F.S.A., Author of "Bartolozzi and his Works," &c. Illustrated. In two vols. Small 4o. Lond. & New York, 1896. *Price* £2. 2s. [*The Leadenhall Press, Ltd., 50, Leadenhall Street, E.C.; Charles Scribner's Sons, 153–57, Fifth Avenue, New York.*]

The fact that few people would quite realise what is meant by a Horn-book perhaps affords some good justification for two volumes on the subject. Certain it is that Mr. Tuer has done pretty nearly all for it that any one could in the two very handsome volumes under notice, and he has actually enclosed within their covers seven real specimens of old Horn-books! The *History of the Horn-book* is a much higher testimony to the skill of the author than to the charm of the subject. After a somewhat careful inspection of these volumes, one is inclined to think Mr. Tuer's painstaking labour and careful observation have been half thrown away. To be sure, the Horn-book appears a quaint and somewhat interesting subject at this latter end of the nineteenth century; but, being an essentially British and American production, it was in a general way almost devoid of any artistic quality whatsoever. There are some examples in Mr. Tuer's book which might almost be called artistic; but there was practically no artistic development of the subject; and though it lasted so long, the use of it died out before it had ever obtained enough artistic quality to become genuinely interesting.

A pretty good definition of a Horn-book appears to be that it is a leaf or page usually containing the alphabet, the nine digits, and the Lord's Prayer, covered with transparent horn, and fixed in a frame with a handle, formerly used in teaching children to read. The earliest record Mr. Tuer can find of a real Horn-book is about 1450. Notwithstanding this very respectable antiquity, it has been found needful to increase the interest of the *History of the Horn-book* by the contributions of over thirty artists, and of their illustrations it cannot be said that the average excellence is very high; it is much below the quality of the nice decorative line-drawing by Mr. Francis D. Bedford at page 163. By the time we have traversed the five hundred pages these books contain, and come to Horn-books made in gingerbread and young ladies' samplers, we feel we have had enough! T. RAFFLES DAVISON.

NOTES, QUERIES, AND REPLIES.

Poliphili Hypnerotomachia.

From PHILIP A. ROBSON [*A.*]—

Seeing, in Colonel Lenox Prendergast's interesting review of Mr. W. J. Anderson's able *Architecture of the Renaissance in Italy*, a notice of the *Poliphili Hypnerotomachia*, 1499, I venture to send a few additional remarks on the latter from a bibliographical point of view.

The whole expense of the first edition of Aldus Manutius, 1499, was borne by a Milanese, one Leonardo Crasso, who "was loath that so admirable a book should longer lie in darkness." Of Crasso but little is known, beyond that he was a Doctor of Common Law at Verona, and a Master of Arts. The correct date of the book is given in the *errata*, which is generally wanting, as, possibly, some owners preferred that of the colophon (1466). Many of the engravings, which are very free, are usually found mutilated, especially the Priapus. This book, however, which was the greatest production of the press of Aldus, marking a culminating point in its career, did not sell well; and Crasso had to apply for a ten years' extension of privilege. The designs, of which there are 151 in the first, and seventeen in the second book, have been very variously attributed to Giovanni Bellino; Sandro Botticelli; some of them, according to Mr. Lake Price, to Vittore Carpaccio; to Jacopo di Barbari; to Raphael; to Andrea Mantegna; to the two Montagnas; to Colonna, the author; to the anonymous Master of the Dolphins (Eugène Piot and Popelin); to the Bolognese engraver Peregrini; and now to Bramante. W. Bell Scott inclined to S. Cæsenus Peregrinus (*Athenæum*, 1880). The variety of these names is alone sufficient testimony to the beauty of the wood engravings, and the book is singularly attractive to the acquirer of rare or artistic volumes, and more particularly to architects. In my copy there

is inscribed, possibly by Desnoyers whose autograph is on the title :—"Je veux parler du *Songe de Poliphile*, fiction bizarre et plein d'extravagances, écrite d'un stile presque inintelligible, mais étincelante de génie, remplie de la plus profonde connaissance de l'art de bâtir des anciens, et de vûes originales et neuves ; livre, enfin, que les plus grands architectes ont toujours étudié avec fruit."

The work is certainly one of the most extraordinary ever written, and has consequently been held in high esteem, all manner of erudite learning, quaint epigram, and artistic precepts abounding in this fantastic dream or mystical love romance. The Hebrew, Arabic, and Greek inscriptions are, of course, merely introduced as a parade of the author's learning. Brunet calls the language Macaronic, which it certainly is not. But the Italian is most pedantic, and has peculiar Latinisms in the spelling.

Little is known of Francesco Colonna, the author, but he seems to have been a Dominican friar, born about 1433 in Venice, who taught rhetoric at Treviso and Padua, and in his old age lived in the convent of SS. Giovanni e Paolo at Venice. So, according to the colophon, he was about thirty-four when he wrote the work. Polia, Francesco's Laura, has been identified with Lucretia Lelio, daughter of a jurist at Treviso, who entered a convent after having been attacked by the plague of 1464-66. As Poliphilo's dream is dated May-day 1467 at Treviso, the places, dates, and people agree fairly well. A MS. note, in the copy belonging to the library of the Dominicans delle Zatere, provides the clue for the identification of the author. By placing in their natural sequence the first letters of each chapter the following is formed :—*Poliam Frater Franciscus Columna peramavit. Ad huc vivit in S. Iohanne et Paulo.* And from a Venetian MS. in the convent of St. John and St. Paul we find Colonna died, full of years, in 1527.

Frequently one comes across notices or quotations from Colonna, not always acknowledged, and the seventeenth and eighteenth century writers on architecture give him considerable praise. He seems to have known his Vitruvius and the late Greek and Roman essayists intimately. The illustrations have certainly left their impress on our art. Stodart, for his delightsome cuts to one of Rogers' small works, evidently studied the *Poliphilus*. And at the present time Morris, Burne Jones, Ricketts, Beardsley, and others have directly or indirectly benefited by its influence.

For those who may desire to possess the volume a few notes on the various editions of which I know may be of service.

First edition, folio, Aldus, 1499. The Beckford copy sold for 130*l.*; Turner, 137*l.*; Hamilton and Crawford, 86*l.* each; Cheney (1895), 119*l.*

Second edition, folio, Aldus, 1545. I am assured by a prominent London bookseller that this edition is, if anything, rarer than the first, he having had several of the first, but only one of the second. Also, owing to the small number printed of the two editions, the woodcuts are not appreciably inferior in either. The peculiarity of this edition is that Oii and Ovi are in duplicate, at any rate in my copy. I presume this edition is more accurate than the first—as the title says, "Ristampato di Novo, et Ricorretto"—but have not had time to make a careful comparison.

Third edition, folio, 1546. Printed by Loys Cyaneus for Jacques Kerver. This is the first French edition, translated probably by Jean Martin. M. Popelin prefers the French to the Italian designs, than which they are more elegant. Jean Cousin, Geoffrey Tory, and Jean Gougon have been mentioned as the artists. In France there have been six editions of the work between 1546 and 1811.

The English edition, which is Elizabethan, is little less than a travesty of the original with very inferior cuts. This was republished by David Nutt in his Tudor Library, 1890, and edited by Andrew Lang, to whose introduction I am much indebted. The Elizabethan cuts have here been replaced by proper blocks, but the volume does not contain anything like the whole of those in the original. However, the writing has occasionally great charm, and we meet unusual words as "mustulent," "gracilament," "wrympled," &c.

I see the Institute purchased a copy of the cuts issued by the Science and Art Department in 1888, so that the beautiful Renaissance designs, in their pagan glory, are handily available without going to the British Museum.

M. Popelin (not Papelin) has produced the best work on the subject after many years' research. For particulars of this edition (in two tomes) and one or two others, see Colonel Prendergast's review in the last JOURNAL. Mr. A. W. Pollard, in a recent *Portfolio* monograph, "Early Italian Illustrated Books," has reproduced several of the engravings, with some interesting remarks on the first edition. This, at least, is within the reach of all.

MINUTES. VIII.

At the Eighth General Meeting of the Session held Monday, 15th February 1897, at 8 p.m., the President, Professor Aitchison, A.R.A., in the Chair, the Minutes of the Meeting held 1st February 1897 [p. 184] were taken as read and signed as correct.

The decease was announced of William Tipping, *Hon. Associate*.

The following Hon. Associate, attending for the first time since his election, was formally admitted and signed the register—namely, Henry Ernest Milner.

A Paper by Mr. H. E. Milner [*H.A.*], F.L.S., entitled THE GARDEN IN RELATION TO THE HOUSE, having been read by the author and discussed, a Vote of Thanks was passed to him by acclamation.

The proceedings then terminated, and the Meeting separated at 10 p.m.